

ITEMS OF INTEREST.

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Thoughts from the Profession.

THE CELL.*

ITS HISTOLOGY AND PHYSIOLOGY.

In physiology a cell constitutes the origin or commencement of every plant and animal. It is the elementary form of every tissue; in fact, the entire organized body, whether animal or vegetable, is an aggregation of cells, and the life of the animal or plant is the aggregation of the life of the cells that constitute its corporeity.

There are two kinds of motion, mass and molecular. All classes of substances, whether organic or inorganic, have molecular motion. The temperature of the body is determined by the velocity of this motion. The mass motion is as the vibration of a viol-string in producing a tone; but it is only in living bodies we find an independent life motion, and it has the origin of its life force within itself. It is quite in contrast with molecular motion.

In the substance within the cell, called protoplasm, there is continual motion up in the center of the cell and downward in its periphery. This is true of both animals and vegetables. In the vegetable, in connection with this protoplasmic mass motion, there is a constant transfer of substance upward from the roots to the branchlets and leaves through the ligneous cells, and downward between the bark and wood; and this, on being elaborated, becomes the protoplasm of the tree. It constitutes growth, and the change of matter from a lower plane of organization to a state of higher de-

* We present in this paper the generally received opinion of the origin of living bodies. In the one that follows, we show the new theory. Both these essays should be read carefully.—ED. ITEMS.

velopment. Thus foreign matter is brought from without and conveyed to where it is wanted within, and there assimilated by the cells of the plant.

Every living cell has this independent life motion from its earliest development, and when this ceases life ceases, and neither life nor its motions can ever be resumed. Chemical action sets in and the structure will be gradually reduced as dead matter to the plane of stable compounds. We see then that everything that grows does so by cell life activity.

The increase in size, or growth, of a living body is always by the segregation of cells, the nucleus forming a partition separating the cell into two parts, thus forming two cells. This is according to the law of brogenesis, or life from pre-existing life, and never by abrogenesis or spontaneous generation. Hence all organized bodies begin their independent existence as a cell.

This leads us to consider what parts are essential to constitute a cell.

Beale says: "The *living matter* with the *formed matter* on its surface—whatever may be the structure, properties, and consistence of the latter—is the atomical unit, the elementary part, of the cell."

Thus Beale calls the external portion of the cell "formed matter," and the internal portion, in all animal bodies, "bioplasm;" while in all vegetable substances it is "protoplasm."

Other authors call this bioplasm, the nucleus of the cell. Beale and other biologists tell us this bioplastic nucleus is the only portion of the cell that has life and life motion, while the external part of the cell, or "formed matter," has no power of independent life action, any more than has the shell of the oyster. In all muscular action the influence of the will is transmitted from the nuclei of the gray substance of the brain, through the efferent nerves to the nuclei of the cells of the muscles, and contraction takes place to produce muscular action. It is through the nuclei of the taste breakers that we have the sense of taste; it is through the ramification of the auditory nerve to the nuclei of the rods of corti that we are able to hear; and the optic nerve ramifies through three or more sets of nuclei in the retina of the eye to sufficiently arouse to consciousness the sense of sight.

We see, then, it is through the *bioplasm*, or nucleus of the cells, that we take cognizance of what is passing around us, and which enables us to maintain the activities of life and the involuntary life actions so essential to our existence as living beings.

The primitive cell, one of the numerous cells of all warm-

blooded animals, is the ovule as it leaves the Graafian follicle. They differ from all the other cells of the body. They are never divided to form new cells, for they are as numerous in a four months fetus as they will be in the perfected body at puberty. They are organized for the definite purpose of reproduction and have no other function. They seem to exist without the active life motion always found in all other cells. At puberty one or more take on an increase of growth, and in time are thrown off from the Graafian follicle.

I wish to call especial attention to the fact, that the germ cells are developed from the external part of the ovaries, corresponding to the formed matter of cells; while the sperm is developed from the internal portion of the seminal tubes, corresponding to the nuclei of other cells. Hence we find in the sperm an abundance of life action, while in the germ there is no power of independent life motion, and is passively acted on by the ciliated epithelium of the fimbriated extremity of the Fallopian tube; it has not even the power to absorb plasma that so abundantly surrounds it. The more we study the cell in all its parts, especially as found in all the higher, warm-blooded animals, the clearer we see that life motion, incident to the nucleus of all other cells, is not found in the ovule, but that this is composed of formed matter alone with no nucleus or bioplasm endowed with primary life motion, so essential to cell segregation. Thus the germ cells differ from all others of the body. Other cells are developed by dividing, to form two in place of one, or in traumatic lesions new cells may be formed to replace those destroyed; or, what is more common, wandering, independent cells, as the leucocytes, may heal the wound by taking the place of the destroyed cells; but in the ovaries, as we have remarked, we find the fetus has as many ova as the body has at puberty. After this they decrease with each menstrual period. We, therefore, consider the germ and sperm cells as not perfect.

Whenever an ovule is fertilized, it is by a single spermatozoon entering the micropyle of the ovule, and it at once becomes a perfect cell and has a life motion imparted to it.

The absorption of plasma now takes place, and the active nucleus initiates cell segregation, so that one primitive cell becomes two, these two, four; this continues till the blastodermic cells are formed. This cell formation is performed by the nucleus of each cell, and not by the formed substance.

If two spermatozoa take possession of an ovule there will be two centers of life action, and a monstrosity is the result if the ovum comes to maturity.

On the fertilizing of a germ cell the ovule becomes an ovum, and cell division takes place by the absorption of plasma so abundantly found in the Fallopian tubes, till the blastoderm is formed. These are compound cells; that is, they consist of three sets of cells, and are known as the blastodermic cells. The external layer of each is called ectoderm, the middle layer mesoderm and the inner layer entoderm; really cells within cells.

The relative development of these three classes of cells determines the temperament of the future being. If the ectoderm cell takes the lead in development, there will be the mental or nervous temperament; if the mesodermic layer of cells is relatively predominant in development, there will be the motor or muscular temperament with a strong, active body, and usually good teeth. If the entoderm cells, which are to form the lining membrane of the bowels, take the relative lead in development then here will be the greater vital development, with irresistible desire for gustatory indulgence, with the usual proverbial aldermanic gastric prominence of the individual.

Whenever these blastoderm cells are sufficiently developed to require more plasmic supply than can be furnished by the Fallopian tubes, they are passed to the uterine environment and conception takes place, usually two weeks after impregnation.

In the lower forms of animal life, as in the ameba, we find life associated with a small mass of bioplasm, constituting a single cell which may be covered with a vesicle. This is among the lowest forms of animal life. Bacteria are classed among the forms of vegetable life. In all warm-blooded animals properly digested food becomes plasma in the blood, and passes to every tissue through the arteries and capillaries.

The walls of the capillaries are so attenuated it takes six thousand to make an inch in thickness. Through these attenuated walls the blood plasma is continually passing, and by imbibation is taken up by the tissues by passing through the "formed matter" of the cells to the center of the nucleus, where it becomes a part of the living bioplasm. This bioplasm is always in motion, and on the outside of the nucleus is changed to "formed matter," or tissue, and it is histologically here that the process of assimilation, or tissue building, takes place. This tissue building is always the result of life action, and the food made use of is never inorganic matter, if we except water; and that is but a solvent, a vehicle by which the organic proximate principles are brought into a condition to be utilized. This process is on the building up side of vital action, by which the cells are nourished and the body is able to

perform the duties of life. There is also a breaking down of cell structure.

By respiration we are continually receiving air, the oxygen of which is absorbed by the red blood corpuscles and by them conveyed to the capillaries, where it passes to the tissues. It there oxidizes the worn-out part of the cells, which is then removed to make room for the newly-formed tissue. This oxidizing of tissue—this disintegration of formed substance of the cell structure—is also the source of vital energy through which we receive the power to think and act.

It is not in accordance with the writings of physiologists, yet from a careful study of the "conservation of forces," we are of the belief that this breaking down of tissue is almost the only source of animal heat.

In all the soft tissues, this disintegration of cellular "formed matter"—as it takes place wherever there are cells to carry on this process—there will be the evolution of heat to warm those parts, but not in the consuming of the oleaginous and farinaceous food products, either in the digestive process, in the circulation, or elsewhere. Or, at least, this is not in accordance with our study of the vital operations of cell life action.

It always requires an expenditure of force to raise a substance from a lower to a higher plane of organization; so we find there is a constant demand for a re-supply of force to maintain the involuntary operations incident to life, as well as the constant expenditure of energy to perform the ordinary voluntary acts of life.

This is as true of all motion incident to life, both voluntary and involuntary, as it is of the engine propelling the long train; for it is a law of the universe that wherever there is an expenditure of energy there must be a fall of matter, or an arrest of motion, either in a mass motion, as in the water-fall, or in the molecular form, wherein there is a change from a higher to a lower plane of organization, as in the burning of fuel to propel machinery; or in the arrest of motion where heat is produced. Hence the source of nerve energy necessary to carry on life activity is in the breaking down of the substance of our tissues; so there must be a constant building up and taking down of our structures that we may live and act, and have pleasure. This evolution of the substances of our soft structures is so actively performed that the blood passes the cycle of the circulation in twenty-five seconds, and all the soft structures are entirely changed three times a year.

This is quite in contrast with the osseous structures, and still more so if we compare their changes with the dense structure of

the enamel of the teeth. The teeth in their formation are developed by the action of the nuclei of their cell structure. In the enamel rods these nuclei perform their duty, and in ceasing to be active, living structures finish up these rods into perfectly formed rods as a monument to perpetuate their memory. When complete there can be no further developmental changes, therefore there can be no secondary enamel.

In the dentine and cementum the nuclei are still found as lacune, or minute lakes, and the canaliculi, or small connecting canals are but the connecting medium between them for conveying the nutritious plasma to all parts of the dentine and cementum. Therefore secondary dentine is often found.

The inter-globular space is the point where the vessels of the dentine and cement mutually terminate. This explains how we may destroy the nerve of a tooth, and yet the cement vessels be able to carry nourishment to the cement and thus support the tooth in performing useful service for many years. Though such a tooth may be called a "dead tooth" it is so only in a sense. The nerve fibrilla in the lacune and canaliculi of the dentine are dead, but are alive in the cementum.

In the treatment of the diseases to which flesh is heir we may learn an important lesson from the study of the physiological action of the cell. It is from within outward, from the center of the nucleus toward the periphery, and each working for the common good of all will constitute the balance in all the vital actions that constitutes health. Whenever this equilibrium is lost the vital forces set up an effort to restore it. This condition is what is called dis-ease. The cessation of this vital action is death.

Digestion, absorption, and assimilation are from within outward, like the action of the cell, from the mucous membrane, out into the tissues and toward the cuticle. In depuration during health, forty-eight per cent of the broken down matter is removed through the pores of the skin. Whenever the pores are clogged other organs have extra work to do, hence the unbalanced action whenever one "takes cold;" for this is a congested state of the pores of the skin.

This same lesson is taught whenever inflammation takes place in any of the internal organs. As the excessive action is toward the skin it determines the diathesis of the disease, whether sthenic or asthenic, high or low fevered action. This should be a guide in a treatment of disease and injuries.

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THE CELL THEORY.

[Part of an Address before the N. Y. Odontological Society, published in the *International*.]

I claim having offered a theory which is far more plausible than the hitherto acknowledged cell theory. Quite recently I was a witness in a law-suit, where I was cross-examined by Mr. Choate; and this gentleman, among other things, urged me to give an outline of these new views. I saw at once he tried to make all that ridiculous, as lawyers do; but I quietly told him the following: "Before the Berlin Museum there is put up a grand marble vase, as high almost as this room, colossal in dimensions, but made without taste,—ugly, in fact. I asked my friends there, 'Why could you Berlin people put up such a tasteless concern as this?' The answer was, 'My dear sir, that is one piece of Prussian marble.' 'Oh,' said I, 'here is the new view of the construction of the body.' Imagine that this marble vase was made up of millions, or, as Dr. Sudduth said once, 'innumerable numbers' of small pieces of mosaic, pasted together by cement, and you would have the old idea of the cell doctrine,—viz., that our body is made up of millions and millions of cells, pasted together by a little intervening cement substance. But if, on the contrary, you say this marble vase is one continuous mass, and though exhibiting different shadings and varieties in structure, nevertheless is one piece, then you have my idea that our organism is one piece,—there are no isolated cells whatever within the tissues."

Mr. Choate seemed to be well pleased with this comparison. What I claim is not absurd; on the contrary, I think it is rather sensible to say that we are one individual, and not made up of millions of individuals. To be sure, in that mass we call our bodies we have closed spaces or vacuoles in which are circulating detached lumps, very much like, in the ameba there are closed spaces or vacuoles in which float detached particles of living substance. In our blood there are floating isolated lumps called red and colorless blood-corpuscles, but they are not a part of our structure. This is not a tissue, for it is liquid.

At the last meeting of the American Society of Anatomists, Professor Gage, of Ithaca, gave us a nice demonstration of the fibrin of the blood, and said the blood is a tissue. I took exception to this view. I said, "There exists no proof that a liquid ever can be a tissue. A liquid cannot be alive. Even the jelly-fish, such as we get in autumn by the handfals on Coney Island or in the East River, are jelly-like bodies, but not liquids. If the theory that blood

is a tissue be correct, then a pailful of sea-water in which there are a hundred fish swimming about is a tissue too, and a droplet of puddle water, in which there are swarming thousands of minute organisms, is likewise a tissue." Professor Gage opposed me, of course. I still maintain that a liquid cannot be alive and cannot be a tissue.

The body, so far as its tissues are concerned, is one continuous mass. There are no isolated cells. There is a continuity of protoplasm all through, and it is the reticulum of living substance that we have traced in all tissues constituting the body, including those building up and forming the teeth. For this is the new view by means of which we can realize that even the enamel and dentine, which are rather hard tissues, must be endowed with properties of life. We see the reaction in the dentine after each filling, and this fact proves that there must be some life. Where is life located? Is it in the lime? Is it in the dentinal fibres? Yes, but is that enough to explain the reaction after each filling, which will cause a hard wall around the filling?

There is something more. It is just the reticulum, the presence of which has been demonstrated in the protoplasm of the pulp, and throughout all hard tissues of the teeth. Its existence was proved in the enamel by Abbott, and quite recently in the dentine by Dr. John I. Hart. William Carr took up this study in my laboratory four years ago, but never could finish it. The conclusive proofs were furnished only in the last few months.

Gentlemen, you will ask me, can I boast of followers in this world, or am I alone in my little school? Ten years ago, Professor S. Stricker, though originally my teacher, adopted my views, and publicly claimed I was right in my assertion that basis-substance is alive, the same as are the so-called "cells." Virchow, in Berlin, will never admit it. He is the founder of the cellular pathology, and as soon as he admits there are no cells, his life's work is gone. What he has done remains forever. We will not attack him, should he be mistaken. We know too well that our successors will step over our shoulders, and woe to us if they do not treat us and our memory well!

We have all reason to be kind, even with those who are mistaken, providing they do honest work. You may ask, Have I followers in this country, outside of those who have studied in my laboratory? I say, yes. Last year a prominent citizen of this city, Mr. Charles F. Cox, delivered a presidential address before the Microscopical Society, which is printed, and which was sent to me by him. I do not know him personally.

Permit me to read what he says about me and my views :

"I can well remember, as perhaps you also can, the disgusted incredulity with which this new doctrine was received—an incredulity in which, I confess, I then shared. I am not sure the appearance of a reticulum in the prepared blood-corpuscle is even yet generally accepted as evidence of a normal structure of the kind claimed by Dr. Heitzmann ; but the claim certainly gains support from the fact that vegetable histologists are pretty well agreed that a similar reticulum is demonstrable in the protoplasm of plants. Professor Goodale seems to have no doubt on this point. . . .

"In the work from which I have just quoted ('Microscopical Morphology,' New York, 1883), Dr. Heitzmann generalizes as follows : 'What . . . was called a structureless, elementary organism, a "cell," I have demonstrated to consist only in part of living substance, while even the minutest granules of this are endowed with manifestations of life. The cell of the authors, therefore, is not an elementary, but a rather complicated organism, of which small detached portions will exhibit ameboid motions. . . . How complicated the structure of a minute particle of living substance may be we can hardly imagine ; what we do know is that the so-called "cell," is composed of innumerable particles of living substance, every one of which is endowed with properties formerly attributed to the cell-organism.'

"It having been shown that life hangs on a web of infinite tenuity, and does not reside necessarily in either a vesicle or a lump, it was a natural and easy step to extend this net-work from tissue to tissue and organ to organ in an unbroken circuit of vital communication. This step Dr. Heitzmann does not hesitate to take ; for, says he, 'there is no such thing as an isolated, individual cell in the tissues, as all cells prove to be joined throughout the organism, thus rendering the body *in toto* an individual. What was formerly thought to be a cell is, in the present view, a node of a reticulum traversing the tissue. . . . The living substance of the tissues exists mainly in the reticular stage, and is interconnected without interruption throughout the body.'

"Again, this at first very strange and, for some reason, unwelcome doctrine receives support from the investigations of botanists ; for, as Professor Goodale remarks, this protoplasmic intercommunication between adjoining cells 'has been shown to be so widely true in the case of the plants hitherto investigated that the generalization has been ventured on that all the protoplasm throughout the plant is continuous.' The position to which we have traced this is, then, that to the latest biology, in any particular organism, a generally diffused and interconnected substance, simple only in appearance under present optical aids, has taken place of the circumscribed, variably isolated and independent, and recognizably complex vesicle which was the physical basis of life to the science of fifty years ago. In the words of Dr. Heitzmann, 'According to the former view, the body is composed of colonies of amebe ; according to the latter, the body is composed of one complex ameba.' "

This is a pretty fair exposition of my views, though it is difficult to give anything like a full view in so short a space.

Carl Heitzmann.

REGULATING APPLIANCES.

The case hereinafter described, from my practice, represents quite a common class of irregularity. The cuspid had been forced to take an inlocked position by the too late retention of the deciduous cuspid and the lateral had been forced forward and outward.

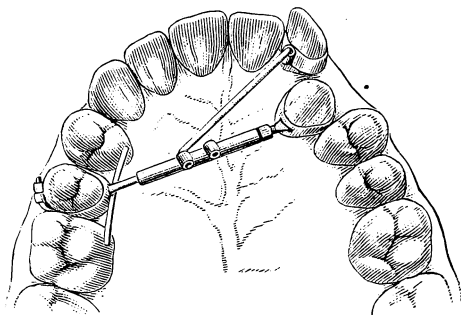


Fig. 1.

The appliance here shows Fig. 1 was designed for the purpose of acting on both malposed teeth at the same time, and by reciprocal anchorage, force them both into the proper positions with the same power.

In the treatment of this case the cuspid was accurately banded, and on the lingual surface of the band a slot was cut, into which was placed the chisel end of one of Angle's *Jack Screws*, the other end of which was supported and kept in proper position by the base of the sheath of the jack screw being slipped over a spur soldered to a clamp band and encircling the second bicuspid on the opposite side of the arch.

This tooth was also reinforced by a piece of wire, soldered to the band at right-angles to the axis of the tooth, the ends resting on the lingual surfaces of the adjoining teeth.

The anchorage was also further reinforced by a piece of the gold wire G, from set No. 1, being bent at right-angles at one end and slipped into one of the small pipes R, which had been soldered to the lingual surface of a band encircling the lateral incisor. The other end was hooked into one of the two small pipes which had been soldered to the sheath of the jack screw, as shown in the engraving.

The second pipe was added for the purpose of still further reinforcing the anchorage with the bicuspid, should it be found necessary.

. It will be noticed that the base of the sheath on the jack screw, lacks about one-eighth of an inch of resting against the second bicuspid.

The importance of this is obvious, for by tightening the nut of the jack screw, the sheath is pushed downward over the spur which supports the base, carrying the lateral with it to its proper place in the arch, when the base of the screw finally rests against the second bicuspid, or the principal anchor tooth. The combined resistance of the molar, bicuspid and lateral is expended in forcing out the cuspid.

After both teeth are in proper position they may be retained by the same bands which are soldered together at the point of contact, and again cemented in position on the teeth.

Or another way, more simple and quite as effectual, if carefully performed, is to slip a piece of the gold wire through one of the small pipes, soldered to the labial surface of the cuspid band, allowing the ends of the wire to rest firmly against the labial surfaces of the lateral and first bicuspid. This pipe* should be attached in the beginning of the operation, thus anticipating retention.

This appliance is so simple, efficient and easy of adjustment, and yet so cleanly and agreeable to the patient, that I am sure all who are careful to adjust it as it should be, will derive much satisfaction from its use in the treatment of this very common form of irregularity.

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[TO BE CONTINUED.]

CHRONIC ABSCESS OF THE ANTRUM.

Mrs. H., aged thirty-eight, sanguine, bilious temperament, was presented to me by my friend and neighbor, J. R. Goodspeed, M.D., September 4th, 1890, the right eye was a little inflamed, the right side of the face flushed and slightly swollen below the eye, and quite sensitive to the touch. In the mouth the upper bicuspids and molars were missing, leaving a well-preserved and healthy alveolar ridge, except at the point where the first molar of the right side had been extracted; here was an opening into the antrum, about two lines in diameter, through which constantly oozed a purulent discharge,

*It should have been represented in the engraving, but was omitted by a mistake of the engraver.

Another mistake of the engraver is that the pipe on the lingual surface of the lateral incisor should be at right-angles with the axis of the tooth.

composed mainly of viscid cerum charged with pus, food débris, and streaked with fresh blood. There was also an intermittent discharge of the same character from the right nostril.

She said she had lost one after another all of the missing teeth, the upper right first molar the last, in 1888.

This tooth was extracted through the advice of her physician, for the relief of severe neuralgia. This was cured, but the cavity would not heal, and a dull, continuous pain was present in the right side of the face and head. After waiting six weeks she consulted her physician, who prescribed some constitutional treatment. No improvement resulting, he referred her to a dentist, who gave her local treatment, which was followed by immediate improvement and entire freedom from pain.

After several months an attempt was made to close the opening by suture, but it proved abortive, and after several attempts she became discouraged and concluded it could not be closed.

During the two years before she came to me she had applied to several dentists and physicians, but as often as the treatment was discontinued the discharge and pain returned.

After hearing her statement, I inquired if she had ever worn a plate or other appliance to cover the opening into the antrum; she replied that she had not. This gave me the key to my treatment, and made me feel very sure of success, believing the condition was caused mainly by irritation caused by particles of food being forced into the antrum by the process of mastication.

There was nothing to indicate the presence of necrosed bone. Though the margin of the opening was soft and slightly inflamed, no roughness could be detected by passing a silver probe freely to the floor of the antrum.

My treatment was four ounces of sterilized tepid water, slowly injected into the antrum by a hard rubber syringe attached to a soft rubber catheter of proper size, to fill the opening into the mouth. The fluid was nearly all discharged through the nostril. This injection was followed in a few moments by the same quantity of water, in which was dissolved a half dram of the following solution: Iodine and phenol, of each sixty grains; alcohol, two fluid drams, prepared at the moment it was used, as the water will precipitate the iodine in a short time. Following this second injection, the cavity was carefully wiped with absorbent cotton dipped in vaseline, containing one-fourth its weight of iodoform. This operation was repeated three times at intervals of three days. A plugget of cotton was inserted in the opening after the first treatment to keep out débris till the plate could be made, and this was

inserted on the day the second treatment was administered. There was no pain after the first treatment, and all of the inflammatory symptoms had disappeared before the third treatment was given. There was no sign of pus after the second treatment, and at the time of the third the opening into the mouth had grown so small that it would only admit a small probe. A week from that day I found the opening about the same. I then dissolved one-sixth grain muriate of cocaine in five minims of water, and injected it into the soft tissue on each side of the opening. One minute later I applied a cautery made for the occasion by bending on itself a piece of wire (22 gauge) and bringing the bow to a white heat with the blow-pipe in an alcohol flame. The burn was quite deep, though the operation was painless. The plate was returned to the mouth with directions to keep it there for at least three days. I saw the patient ten days later, and found the opening closed and healed.

On inquiry, six months later, she wrote me (March 30th, 1891): "I am glad to be able to write you that I have had no return whatever of the antrum trouble for which you treated me."

E. D. Eddy, San Mateo, Cal.

CHLORALAMID IN SURGERY.

Frequently after an operation of magnitude it is necessary to give the patient something to quiet the nervous system and to produce sleep. It is not always pain which causes restlessness and sleeplessness after the operation—in the majority of cases I am sure that the impression on the nervous system, and particularly on the mind, is what leads to the insomnia; for under our antiseptic methods, and especially where the wound has been covered with iodoform—a drug having decided anesthetic properties—there is but a trifling amount of pain, often none, even after the most severe operative procedures. But as night draws near there is a growing restlessness, and at the hour when sleep should come the patient is anxious, nervous and wakeful. What can be done? The almost universal rule among surgeons is to order a hypodermic injection of morphine; but I believe this is unjustifiable unless there is some indication for the anodyne effect of the opiate; this is markedly true in abdominal surgery; but in any case the morphine is objectionable because it is apt to produce vomiting, is certain to seriously interfere with the process of digestion, is sure to induce constipation, and nearly always to give rise to headache, malaise, etc. Chloral has been suggested as a proper hypnotic; but chloral

depresses the heart to a dangerous degree, and therefore cannot be used in these cases. Bromides, with hyoscyamus, will sometimes answer the purpose admirably, but most stomachs rebel against this combination, so that it is hardly safe to try it. If a drug can be found which will be free from all these objectionable features it unquestionably will fill an important place in our materia medica.

Such a one it seems, has been discovered in chloralamid. This comparatively new medicinal agent is prepared by combination of two parts of chloral hydrate with one of formamide; it is found in commerce as a colorless, crystalline substance, nearly tasteless, soluble in about twenty parts of water and two of alcohol. It will keep indefinitely in solution without decomposition, but cannot be dissolved in hot solutions because of chemical changes. It acts very much like chloral and sulphonal, but does not depress the heart like the former, and is much superior to the latter in that it is soluble, exerts no bad influence upon digestion, possesses no diuretic action, never causes pruritus, vertigo, diarrhea, or other bad symptoms which sometimes follow the administration of sulphonal—in fact, experience is demonstrating the accuracy of Reichmann's observation: from chloralamid no ill effects in the circulation or in the feelings of patients are to be noted; and, besides, the cost is much less than that of sulphonal. T. Lauder Brunton, in a recent report on the Relative Utility of Different Hypnotics, highly commends it, and states that with reference to certainty of action and the question of tolerance chloralamid surpasses.

It exerts its influence on both the brain and spinal cord, producing sleep and reducing the motor excitement; it may be regarded as a pure hypnotic without anodyne properties, though some late reports would indicate that it has to some degree the power for partial abolition of pain. It is, then, the ideal sedative, prompt, satisfactory, reliable, and free from evil or after-effect.

Its dose is from fifteen to sixty grains. The proper method of exhibition is to give fifteen to thirty grains (according to the condition of the subject), repeating the dose in an hour if the first have not produced sleep; usually from ten to thirty grains give five to eight hours' refreshing slumber. The best method of giving it is to dissolve the required amount in about a teaspoonful of whiskey or brandy, or in a small glass of wine if the patient prefer. It may also be given in anything containing alcohol in considerable quantities, as tincture cardamon compound, tincture of hyoscyamus, etc. If for any reason it cannot be given in this manner it may be taken in powder form, and washed down with cold water or cold tea.

Emory Lanphear, Kansas City, Mo.

A READY METHOD OF REPAIRING THE METALLIC PORTION OF COMBINATION WORK.

The repair of the metal portion of attachment cases, or combination work, if the break is near the non-metallic portion, frequently entails the remaking of the case. An expert workman may strongly solder a break without injuring the work by protecting the teeth with wet plaster or by other expedients; sometimes, however, this is impossible, and we must choose between remaking, riveting, or the use of tinman's solder.

The following method of making such repair, where it can be used, may avoid the necessity of remaking. It is ready, quick, and gives satisfactory results.

After adjusting the broken portion of the denture, flask the case as for vulcanizing, so doing it that the plate and teeth will be in the same section of the flask, leaving in the other a cast of the palatal portion of the plate. So arrange that the sections of flask will separate readily without straining any portion of the plate, and also to permit its removal and accurate replacement.

The plaster having become hard, the flask may be opened. Sometimes, to avoid accident, it may be necessary to first make the flask and its contents sufficiently hot to slightly soften the rubber or celluloid attachment; it is better, however, in other cases to open it cold. After the flask is open, apply to the plate the blow-pipe flame, or by other means sufficient heat to release it from the attachment, and remove it. This should be done cautiously, so as not to destroy, any farther than necessary, the attachment; or, by using too great a force, bend the plate, injure the teeth, or the mold in the flask. We now have the plate free, and in the usual manner may make any desired repairs; bearing in mind, however, to provide for its accurate replacement in the flask. To add to its thickness, a corresponding portion of plaster must be taken from the mold in the flask, so that the plate will again occupy its original position.

The repairs to the metallic portion of the denture having been completed, it is adjusted to that section of the flask having the cast of its palatal surface.

We now proceed, without changing its position, to cut away all portions of the attachment injured by the heat used in removing the plate, farther removing sufficient to allow free space for the staples, pins, etc., on the plate, and to make such undercuts as may be necessary to securely unite the new to the old material. This having been done, we proceed to pack and vulcanize, making sure that

the flask is entirely closed. When the case is finished, if proper care has been taken, a narrow line of new material will be the only visible indication of the repair; if a darker shade of rubber has been used, this will be hardly perceptible. The fit of the plate, the articulation and arrangement of the teeth, so often disturbed in remaking, will be unchanged, while the time and labor has been but little more than that required for a similar repair of any ordinary vulcanite case.

In a similar manner, clasps may be added, or the denture extended, the desired additions being fitted and secured to the original portion before flasking.

N. H. Keyser, D.D.S., Germantown, Pa.

HOW TO GET A TIN CAST.

EDITOR ITEMS:—Let me tell Dr. Steele, of Forest City, Iowa, how to get a tin cast. Get a good plaster model, dry it, dip in melted stearine, and take two or three impressions in molding sand. Pour one of them with tin, wait a few moments, and pour the tin in the sand back into the ladle. A thin coating of tin which has cooled gives a perfect hollow cast. If too much time is allowed the hollow cast will be too thick. A little experience will show how long to wait. With a very thin saw make several cuts from the edge to the center of the ridge. Fill with plaster, and you have a plaster cast coated with tin, and the slits made allow the sections to be bent inward, and the plate will come off. If this last precaution is not taken, you are liable to fracture the plate or check the gum sections in taking off the case. The dried and steared model should be kept. I keep all models, vulcanizing on duplicates, and find it a very good practice. With small partial cases, that come off and on the model easily in the wax, I invest without the model, and finish and fit the case to the model after vulcanizing. Then it goes into its place in the mouth without any filing.

I would like some one to point out the advantage of taking a plaster impression for a partial case, where the shape and position of the remaining teeth prevent the impression coming away except in pieces; then carefully and laboriously piecing the plaster together and pouring a cast, and when the case is finished, filing away the plate to fit it into the mouth.

If I was a patient, my faith in the skill of the dentist would diminish, if he had to spend a large share of my sitting in fitting the plate, as is so often the case.

Let me ask some young operator, who swears by a plaster model, to try my way with the next partial plate he has to make. Of course, I do not refer to partial suction cases, as I never make any. Get a perfect impression in modeling compound, making a special tray, if necessary; dry and dip the model; make a wax plate with a strong wire or two imbedded in it; grind in the teeth, at the chair preferably; and see that the wax plate fits the model nicely in every part. Take it off and on two or three times till you feel sure you do not bend it in so doing. Invest without the model, and when it is finished and polished it will fit the model exactly and the mouth as well. If your case ever breaks, or you want to add a tooth, your model is ready. If your patient goes abroad, and breaks the case, you can mend it, and be sure it will fit, if sent by mail; and if some poor old grinder gets loose, and drops out, you can cut the corresponding tooth off the model and add one. It is sure to be right.

In a former hint to the ITEMS, I mentioned the fact that for that dodge and many others I was indebted to the British workman. The type made it look like the name of a paper. I meant and now mean to give the credit to different British mechanical dentists, from whom I have learnt more and better mechanical dentistry than I ever learned in the United States, and my opportunities were not limited there.

Charles Rathbun, 7 Wimpole Street, London, W.

ROOT AMPUTATION.—From the posterior root of the left upper first molar of Mr. S., a discharge of pus had been noticed for several months. The pulp had been devitalized for several years and the cavity filled with amalgam. The gum around the tooth was healthy except where it bordered this root; here it had receded from the neck about one-sixteenth of an inch, and on pressure pus would come around the roots. As the patient did not care to lose the tooth, I cut through the diseased root with a fissure bur just where it joined the crown, and lifted it out of its socket with an excavator. The root was partially absorbed and bathed in pus. Where it was cut off it had been filled, so no other filling was necessary. After dressing the stump down smoothly and treating the gum I discharged the patient; I have seen him several times since, the gum seems healthy, and there is no pus. The tooth is sound, never the worse for having lost one of its three roots. I have no doubt but that many of the teeth now sacrificed could be saved by this simple method.

—E. H. Raffensperger, in *Journal of Dental Science*.

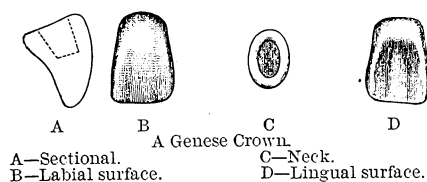
A NEW CROWN.

It is only by repeated trials, in any particular line of thought, that there may be a reasonable ground for hoping to attain that perfection which is limited by human energy. This statement is, therefore, sufficient justification for presenting to the dental profession a crown which the writer, for two years, has used successfully without a single failure. This rather remarkable and uniform success in the use of this crown has emboldened him to set forth what he regards as its special advantages over those which he has previously used.

The illustrations will give to the eye as good a conception of the few parts required, as a long description of each can possibly do. The whole method involves nothing new, and can be easily employed by any dentist who can use a blow-pipe. There is no need for special instruments, and after the first crown has been set by any operator, he will find that he can do the whole operation in setting a crown, in from forty to fifty minutes, with no inconvenience either to himself or his patient.

The crown (Fig. 1), or rather tooth, is of porcelain and contains

Fig. 1.



a small platinum cup, burnt in, into which the post that enters the root canal is soldered. The crown is then adjusted to the root, and cemented into it in the ordinary way. Its extreme simplicity

in the matter of adjustment, and the comfort to the patient ought to commend itself to any one who has a sincere love for art as exhibited in the beautiful and useful.

The considerations which have influenced me in bringing this crown to the notice of the dental profession may be summed up as follows:

A perfectly natural-shaped crown.

The crown can be accurately fitted to the most difficult position or articulation leaving the fastenings strong and intact.

Crowns can be chosen to fit accurately the root with little grinding.

The post is absolutely in its proper position to the root and crown without undue strain on either.

No enlargement of the root canal is required except to remove soft dentine; as the posts are made to correspond to the general shapes of the canal.

Crowns can be adjusted to bifurcated and molar roots as easily as to those containing a single post.

Hollow post cones are stronger than solid ones.

If accidents occur, it is not necessary to remove the post, as a new one can be placed into the old one.

The patient experiences no such fatigue as in fitting an ordinary crown; for, when the root is ready, a model can be taken and the crown fitted accurately to it in the laboratory; also, the model can be sent to the depot, thus insuring the fitting of a tooth to it, which is impossible in cases where the post is permanently fixed in the crown.

Great strength is given to the crown by the soldering process, and the union can be made so perfect that no disintegration of the cement takes place.

In order that my device for crowning may be more fully and completely understood, I herewith submit, in a condensed form, full and complete instructions for this kind of work:

Prepare the root and canal in the usual manner.

I. Then take an impression of so much of the upper and lower teeth containing the root, so as to obtain a model that will give accurate articulation.

II. Choose the crown suited in form and color to the case.

Fig. 2. Select that post (Fig. 2) which will fit the canal easily and yet tightly. Having the model prepared, grind the crown to fit the root and articulate with the opposite tooth.



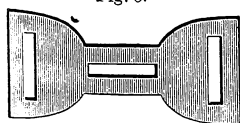
Post.

III. Fill the apex of the root with pure tin, or any substance which the operator has found to be the most serviceable, in order to prevent the cement from being forced through the apex. Place the post in the canal and try the crown on the root with the post in position; if the post be too long file it off till the platinum lining of the crown and the post touch with the tooth in the desired position.

IV. Dry the tooth and post. Fill the platinum cup in the tooth with Fowler's Sticky Wax. Warm the post, tap it into place in the tooth, and finally adjust as you desire. Cool the tooth with water, so as to harden the wax in the cavity; and then carefully remove the tooth and post by gently withdrawing them.

V. Mix any investing material—Teague's Compound is the best—put it on any substance, such as a piece of tin or glass, press the tooth into it, and with it cover the tooth, except the cavity, letting the holder (Fig. 3) support the tooth invested in the lower part, the end of the post coming through the top slot. By putting the investing material over it, the post and tooth will be held securely in place, as illustrated

Fig. 3.



Copper Holder.

in Fig. 4. This will leave the end of the tooth and post clear to view.

VI. When the investment is dry enough, pour boiling water over the wax—steam will do as well—so as to melt the wax from the cavity, which should then be clean and dry. Add the flux. Put the solder in thin strips so that it will pass down between the post and the tooth, and touch the platinum lining. Gradually heat the investment, and when thoroughly dry, solder.

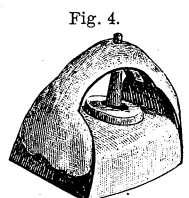


Fig. 4.
Tooth invested, showing use of holder.

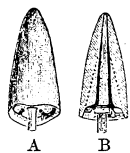
VII. When the crown and post are ready for cementing into position, dry the root canal. Rub up some amalgam dry; mix a sufficient quantity of oxyphosphate of zinc; add to this an equal bulk of the amalgam and work up together. This will give a slow setting cement of great density, and one impervious to moisture.

Solid or hollow posts may be used at pleasure; and, if desired, pure platinum pins can be furnished to order.

These teeth will not crack on rapid cooling, and are ready for inserting five minutes after soldering. They may be ground into any form, and repolished with Arkansas stone and finished with putty powder, on wooden points.

The post may be barbed, and it may be found advantageous to insert a wooden point into a plugger or any mallet, and with it give a few taps, which will drive home the crown securely and in the right direction.

Fig. 5.



A.—Frail root with pin and collar in position.
B.—Sectional view of A, showing how collar supports the post.

Should a frail root be met with—hollow at the surface—it can be successfully and delicately crowned by using a disk of gold or platinum cut in star shape with a center hole, slipped over the post and soldered into place (Fig. 5). This will steady the post and crown without undue pressure upon the sides. The fine part of the post will reach the apex, and the collar will support the base of the root. The openings in the collar will allow the cement to escape if it be too full.

A collar or band, as shown in Fig. 6, can be put upon these crowns in the shortest space, having no overlays on the crown, yet soldered so thoroughly as to leave no weak point or space for entrance of moisture.

If desired to band instead of pivot, fit the band to root, having the crown adapted also. (No need of the band overlapping the crown.)

Fig. 6.



A.—Crown banded.
B.—Sectional view of A, showing platinum cup.

Fig. 6.

ERRATA.



A

B

Figure 6, A and B, should appear as on this slip. Through an error the printer used wrong cut to illustrate the sectional view.

A—Crown banded.

B—Sectional view of
A, showing platinum
cup.

Take a plain disk of soft platinum or gold larger than the root, place it over the end of the crown and burnish it on, puncturing the center and turning it into the platina cup. The band is then placed on and waxed into position, invested, and the band, disk and tooth soldered together.

When trimmed up, the lower edge of the band is flush with the top edge of the tooth, leaving the crown clear of metal and only the narrowest band required on the root, with no possibility of moisture entering the space.

If the root canal is curved, use flexible drills for cleaning. Anneal the pivot post, apply a little vaseline and gently tap it into place; it will conform to the direction of the canal, and can be withdrawn for soldering.

If the platinum lining is filled with wax before grinding it prevents moisture or dirt from getting into it; and when warmed for fixing the post is sure to be held tightly in position.

Although the steps in the operation of setting this crown have been amplified into seven steps, there are really but three: 1. Preparing the root and canal; 2. Taking an impression and adjusting the crown; 3. Soldering and putting into position.

By making the investment high, it becomes easy to direct the flame around the tooth, making it hottest first, thereby forcing the flow of the solder into the cup.

David Genese, D.D.S., Baltimore, Md.

A novel petition is being circulated at Waynesboro, Ga., by a negro preacher who lives a few miles out in the country. It is an appeal for money to purchase a set of false teeth. He was greeted with laughter wherever he appeared, but, nothing daunted, he is still going the rounds with his petition. He says that he can't preach the Gospel without teeth.

—Atlanta Constitution.

"Rotten teeth," says Dr. Tucker, is a vulgar phrase and indecent. It conveys to the uninformed mind a falsehood, and, I fear, is not always used with a proper understanding by those who should know that the teeth are incapable of such a process as rotting, any more than the flesh of a healthy man. That process which is termed "rotting" of teeth, or sometimes, for decency, "decaying," ends totally at death, and never is or can be continued in the grave.

Extract a tooth and you immediately stop its so-called "rotting," nor can you by any means make it go on except under artificially produced conditions similar to those that caused the decay in the mouth.

CUTTLE FISH BONE FOR DIES.

EDITOR ITEMS:—I read some time since, but where I cannot now recall, an article which said that jewelers sometimes employ the cuttle-fish bone, in common use for birds, as a matrix for reproducing small articles of jewelry, etc., the article being firmly pressed into the cuttle-bone, leaving a beautiful impression of the object, into which the metal was poured. I immediately thought it would be useful for small dies in crown and bridge work, and having tried it, must say it makes the most beautiful and perfect impression of anything I have ever used, and I wish to call the attention of the profession to it. Shave the bone till a flat surface is obtained, into which press the crown firmly. Remove the crown and over the impression place a small piece of brass tubing, the diameter and height you wish your die. Pour in some melted Babbitt's metal, and when cold you will have a perfect die, the making of which has not taken over five minutes. *Frederick H. Lee, Auburn, N. Y.*

DIFFICULTY AFTER EXTRACTION.—One evening last November a young lady of eighteen years called to have a tooth extracted, which had been giving her trouble. It was a lower right-second molar in a hopeless condition of decay, which I extracted. Next day I was called to visit her. I found the right side of her face completely paralyzed, mouth drawn over to the left-side, eye open and staring, could not wink that eye, if the lid was pulled shut could not open it, and sight in that eye almost gone. She had consulted her physician and he sent her back to me. I advised electricity, and gave for the first three days two treatments, and for the next ten days one, after which the face was in a normal condition, improvement being felt after the first day. Sight returning first, then the movement of the eyelid. An examination of the mouth with an electric mouth-lamp showed nothing unusual, nor could I discover any fracture by the use of an instrument in the socket of the tooth.

A. H. Butterfield, D.D.S., Stamford, N. Y.

EDITOR ITEMS:—To prevent breaking, and for strengthening the duplex spring of Shaw engine, I use rubber tubing that will fit snugly to spring, using clamp forceps to spread the tubing while applying. I first tried this six months ago, and I am still using the same spring. *Chas. H. Stadlinger, D.D.S., Meadville Pa.*

CALCIFICATION OF A PULP.

EDITOR ITEMS:—Enclosed please find what I call a fine specimen of nerve calcification. Two weeks before going to dentist, he felt an uneasy sensation in first right lower molar. An anterior apex cavity was found and filled with amalgam, and the cavity did not appear to call for any non-conducting material. In two or three days the filling was uncomfortable, but no acute pain. One night, pain became unendurable; a dentist removed the filling, but he failed to stop pain. He put in a filling of oxyphosphate; the pain continued. He then consulted me again. The tooth very sore; I removed the oxyphosphate, but did not see indication of an exposed nerve. I extracted the tooth and curiosity induced investigation, when I found the nerve completely calcified, as you see it. The patient claims that this tooth had never given him any pain till within two weeks preceding his appearance at the dentist's. Can a nerve calcify in two weeks? Can calcification take place without pain? Isn't it a fine specimen, though?

J. E. Miller, South Bend, Wash.

[This is certainly a fine specimen of calcified pulp. It is very hard, the whole pulp being completely turned to bone. It is very singular that it should not have given trouble long before the visit to the dentist, and still more singular that it should have given any pain so long after calcification must have taken place.—ED. ITEMS.]

EDITOR ITEMS:—May I ask a few questions? You may not be able to answer them; indeed, I think you will find it difficult. Why, then, do I ask them? Perhaps just for the fun of it; but I think you will guess the reason. Consent being granted the questions are:—

1.—In his paper before the Illinois State Dental Society (quoted in May ITEMS), did Dr. Pruyn intend to describe his method of preparing cavities for, and filling with, amalgam and gold in combination?

2.—If so, which the context seems to indicate, did he do it?

3.—If not, why should he take the trouble to state to a body of intelligent dentists that such a procedure is practicable?

4.—Did they not already know it?

5.—Is it my fault that I cannot see the aptness, or fitness, of the following quotation from the doctor's paper, as given in the ITEMS? "The amalgam is placed with as much care as gold, the walls of the cavity being prepared not as for gold."

6.—Did he really intend to say “not as we prepare them for gold,” or is the “not” a printer’s mistake?

7.—If the cavity should not be prepared as for gold, how should it be prepared? It is an important detail.

8.—Does he put in the amalgam and gold at one sitting, or does he—

9.—In short, what is his method?

10.—If he intended to give it, did he do so?

E. T. Ide, Rockville, Conn.

A GOLD CAP CROWN.

DEAR DOCTOR:—The ITEMS OF INTEREST for June is so full of good things I am tempted to contribute an item. My method for making a gold cap crown is this. As I never learned it from anybody, or read of it, I call it my method: Take a bicuspid, for example; root in good condition to cap. Keep it dry any way most convenient. Mix up some oxyphosphate soft, place enough on the root to form a phosphate crown, molding it into shape and size wanted while it is hardening. Before it is quite hard let the patient bite onto it, to give the right occlusion. When hard take the measure around the neck of the tooth for the size of the gold band, then take an impression of the phosphate crown with Melott’s impression compound, and run a die with Melott’s metal. Place the gold plate for the cap on a flat piece of lead, and with this die swage the cusps into the gold. When the cusps are formed, make the gold band, place it on the die, and with the band on the die gently swage again the cap with the cusps formed, till the cap and band are brought close together all round; then solder the cap to the band, file and polish, remove the phosphate crown from the root and place on the gold cap. If anybody has a quicker or better method I have never heard of it.

S. C. Slade, Millville, N. J.

EDITOR ITEMS:—I want to save somebody trouble. I have been in the use of rubber since it was first introduced. I saw a statement in last December ITEMS that if rubber is closely confined a force may be exerted by its expansion which the contents of the flask cannot resist. “Broken blocks, open joints between sections, teeth forced out of place,” etc. I have used rubber ever since it was introduced, and know all these misfortunes are due to overheating.

Never run up your mercury above 320° , and you will never have all the evil consequences which are attributed to close confinement.

It would be an advantage if vulcanizers had a safety-valve alongside of the thermometer, by which a test of the pressure can be ascertained. When getting up heat, if the vulcanizer has been in use a long time and the mercury is up to 320° , then, by a turn of your safety-valve, allowing a single puff of steam to escape, we may find the mercury rush up to 340° or more. How to account for this inaction of the mercury is a mystery, but it is a fact, and hence the possibility of overheating.

A. Wirt, D.D.S., Philadelphia.

I have used Welch's alloy for many years, and it has proved itself the most satisfactory of anything and everything I ever used in that line; it requires less mercury, is stronger, brighter, and more enduring than any I know.

A. W.

WHAT IS NITROUS OXIDE?

In the June number of the *ITEMS*, under the heading of "Human Nature Unveiled," on page 373, there is a statement not in accordance with facts, as I understand them.

"Nitrous oxide gas contains nothing but the elements of the common air. The only difference is that those elements are mixed in another proportion. The air contains four parts of nitrogen and one part oxygen; nitrous oxide is half oxygen and half nitrogen."

The real distinction between nitrous oxide and common air is not here set forth; the former is a chemical compound represented by N_2O_2 , while the latter is $4 N. + O.$, a simple mechanical mixture where the two elements are free and uncombined, like two kinds of fruit in a measure, you may take which you may and leave the other; but in the N_2O_2 the elements are combined so that in taking one the other must go with it. When oxygen unites with iron to form the binoxide of iron, that iron rust is a chemical compound of the two elements, and he that takes of the Fe_2O_3 must take part of each, because chemically united.

In ordinary respiration, the oxygen must be in a free state, as it is found as a part of the air, and as such the red blood corpuscles will take it up and utilize it. And if pure oxygen be added to the mixture, and inhaled, the effect would be very different from that of nitrous oxide. N_2O_2 is not anything like $4 N. + O.$, though each contains the same element.

J. F. Sanborn, M.D., Tabor, Iowa.

LIGHT FOR THE DENTIST.

Light is a compound, and when analyzed is found to be composed of four elements—photogenic, calorific, actinic and colorific rays. The influence of light is then fourfold. These rays may act independently, or in connection with one another. It has been repeatedly demonstrated that the calorific ray of the sun exerts a healthful influence on animal and vegetable life, incomparable with heat emanating from other sources. Reference to cellar plants and closely-housed people will vividly portray the effect of the absence of the calorific element of light.

The function of the actinic ray is to produce chemical changes, and its influence on organic and inorganic matter is manifested by promoting metamorphoses, so essential in the development of animals and plants.

The application of light to our purpose as practitioners of dentistry, should be considered from two standpoints, each is equally important.

First. Its management in the performance of operations in the operating room, and its uses in the laboratory.

Second. Its influence in promoting health.

The first phase of the question, I am aware, has received some attention, and a wide diversity of opinion has been elicited during its discussion.

We must keep in mind the fact that rays of light, as projected from their source, are straight or slightly undulatory.

It is, in my opinion, very desirable that these rays be brought to bear on the part to be operated on, in as straight a line as possible.

We may perform our operations on the teeth more successfully, with greater facility and ease to ourselves and patients, by applying direct rays of sunlight to them.

The dental operating room, instead of being selected with great care as to its arrangement for receiving light, is too frequently poorly lighted, poorly ventilated and deficient in many conveniences seemingly indispensable.

The operating room should be lighted from the south by *one window only*. It is, I believe, a very great mistake to admit light to an operating room through windows opening in different directions. Light from an octagon front, or, more objectionable still, a cross light, as from a south window and an east window, should be avoided. Refracted rays, thus employed, impair the focusing power of the eye, and vision becomes disturbed, the eyes weary, eye

strain follows, headaches are frequent and sometimes almost constant; other nervous maladies are observed, and the general health of the dentist, in consequence of badly arranged light, may irreparably suffer. The paper on the wall of the operating room should be dark, preferably drab, so as to absorb light and not reflect it; this I regard as assential in preserving the eyes, the operation is better lighted, and therefore may be more perfectly performed.

Light admitted to the operating room may be deficient or excessive in quantity.

A window facing the south from forty to sixty inches in width and from seven to nine feet high, with glass set on a line with the outer surface on the wall of the building, with no shadow cast on it from buildings on the opposite side of the street, or trees, affords us the most satisfactory light obtainable. By the use of white and dark shades arranged so as to be adjustable to any part of the window we may tone the light as we desire.

No more light is required in an operating room for one operator than such window; it is usually necessary to adjust the shades so as to darken a portion of the window to get the best effect.

The operating room should not receive a *glaring* light. *Glare* taxes the eyes and leads to visual disorders.

It has frequently been recommended that a sky-light be employed for the laboratory; while the soft light from the sky-light may be quite satisfactory to the performance of laboratory work, I believe the prosthetic dentist should not occupy a room from which the sun's rays are excluded.

Artificial light in the operating room should be employed only for diagnostic purposes. The light of day only should be used for the filling of teeth. It may be possible in favorable cases to fill a tooth well by artificial light, but no dentist can afford to tax his health and strain his eyes in so doing.

The employment of electricity as an illuminating agent has placed at our command a most valuable adjunct to operative dentistry.

Mention of the use of electric lights for oral examinations was made in 1866 before the Paris Surgical Society.

"Prof. Burns, of Breslau, exhibited a new instrument to be termed the stomatoscope. A platina spiral wire (inclosed in a boxwood cup, to prevent the transmission of heat) brought to a red heat by the passage of an electric current from two of Middeldorp's elements, is placed in the mouth behind the teeth.

"The light reflected by a very small mirror is sufficiently intense to render the jaw transparent so as to allow of the vessel proceed-

ing to the roots of the teeth, the smallest speck of caries, etc., becoming visible.

"By reason of the transparency, even the labial coronary artery may in some subjects be seen at the level of the commissure and its course followed. The instrument is therefore likely to form a useful means of exploration in dental affections." This description of the electric mouth light, twenty-four years ago, while read by many, was little regarded, but the prediction that it would be useful for diagnostic purposes has been amply verified.

The value of the laryngoscope in making examinations of the mouth, nares, throat and antrum I regard very highly. By its use more satisfactory examinations may be made than by daylight.

—Dr. T. W. Brophy, in *Review*.

SOME HINTS ON FILLING TEETH.

Is there an earnest, progressive dentist who has not often wished he might be saved the annoyance of failure, resulting from the inability to properly meet and overcome the difficulties frequently encountered in the operative and the mechanical departments of our work?

Teeth of soft texture, long neglected, badly decayed and broken down, covered, perhaps, with calcareous deposits, present conditions wherein success is doubtful and only to be attained by delicate and skilful manipulation. The restoration of broken-down teeth and the mounting of the different crowns may be easy for a few of our most skilful operators, but is practiced with difficulty by most.

The tendency with many is to shirk responsibility and perform an operation that will most readily free us from present difficulty, regardless of remote consequences, and leave us ready to engage in more pleasant and profitable employment. Especially is this so since the advent of the oxyphosphate.

It is detrimental to the reputation of an operator to perform hasty and imperfect operations on the plea that the occasion does not warrant an effort, and it is *cowardly* to extract simply because success is doubtful. No wonder people lose faith in the vaunted progress of dentistry.

An intelligent man will not do thus while engaged in building up a reputation. Should we not in *each* case endeavor to approach as nearly to success as lies within our power? It is often a desire to dispatch our work easily and profitably, instead of lack of means

at hand, that causes most of our failures. Even white teeth of inferior structure with enamel the thickness of writing paper may usually be saved for many years by proper means.

Occasionally we see the work of some operators that seems to stand in spite of all adverse circumstances and surroundings. And it is said, "He is a genius, a man of a thousand." Watch him operate, study his methods—you will find that genius simply means labor, thought, attention to details, the leaving of nothing undone that may contribute to success. It is attention to details that enables him to make his operations durable—to save 99 per cent. of pulpless teeth, or to preserve alive and in comfort an *exposed* pulp. The man of detail does nothing hastily, (though he is not necessarily tedious) and his failures are therefore few. The proper preparation of the cavity, the judicious selection and *correct* insertion of filling materials will almost invariably bring success. The co-operation of the patient is a valuable aid and should if possible be secured.

Rules must be varied to meet the work in hand. In the six anterior teeth, care should be taken to dress back frail walls—*especially* on the lingual surface, so as to afford all possible protection. This important fact is often disregarded, as is proven daily by cases coming under our observation. Suppose two operators of equal manual dexterity—one of whom habitually disregarded this rule, but obtained access by cutting away the strong labial enamel plate, the other using this wall to retain the filling and gaining access from the lingual surface, cutting as freely as circumstances dictated, what would be the relative ratio of their failure or success? Frail corners should be removed, and, if necessary, entire cutting edges restored. Even a "jewelry" filling is preferable to an artificial tooth whether sustained by root, bridge or plate.

For example: The tooth—a left central incisor—was so badly decayed from the distal surface that the alveolar process was reached. A large portion of the lingual and somewhat less of the labial walls were gone, and the remaining portions but little stronger than an egg-shell, though the cutting edge remained intact, and the cavity partly filled with hypertrophied gum tissue; this being excised, the canal cleansed, treated and filled, the cavity was prepared and lined with oxyphosphate, and a contour amalgam filling inserted. After a few days this was well polished, the dam adjusted, and the visible portion of the amalgam cut out to form a shallow cavity, and faced with gold. Was not this likely to prove more durable than a crown? A strong post inserted in the root canal will often be needed to help retain such a filling.

In preparing frail cavities in bicuspid and molars, the lateral walls should be cut back enough to be out of reach of particles of food that may be allowed to remain between the teeth. Some writers object to cutting between teeth, fearing the teeth will be overburdened with filling materials and unable to bear the strain of leverage exerted in mastication. This fear is groundless where the grinding surface is well cut back and properly protected by fillings of sufficient thickness. Experience teaches that even slight undercuts or bearings against cavity walls will retain fillings safely, if only such walls are themselves protected from fracture. The cervical margin of the filling should be carried below the gum line, and restoration to *full contour* made in all proximal fillings, and finally, all surfaces well polished.

While recognizing the value of gold, and especially soft gold at *vulnerable* points, we hope, by using other materials, to gain advantages not possessed by it alone. Gold with amalgam, or amalgam alone, have their respective merits; the oxidation which is almost immediately commenced around such fillings tends to stop any minute crannies existing on completion of the work. Gold fillings with a layer of amalgam at the cervical margin are, I believe, the best protection for teeth of the class now under consideration. But here again we must attend closely to details or fail. A matrix is necessary, and should be narrow—but little wider than sufficient to cover the meeting place of the two materials. Having cavity ready, matrix firmly fixed in place, and instruments selected, prepare the amalgam quite dry. Place a small quantity against the cervical margin and burnish well, then another small piece *lightly* packed on the first, as gold does not readily unite with a burnished surface. Now quickly condense a piece of Williams' crystalloid gold on the amalgam till the gold color is lost, and follow with more till the mercury ceases to show, when the filling can be finished with any form of gold desired; but *don't* smear the amalgam over the matrix or into the cavity, or your filling is spoiled.

In packing amalgam a well-fitting and immovably fixed matrix should be used, the material packed with strong rotary motion, and matrix left in place till the filling is fairly hard, and if properly mixed and manipulated this will be but a few minutes. If desirable, the matrix may be removed at once by slipping out sidewise, and a piece of medium dam, which has been slightly moistened, inserted between the teeth, be held for some moments with steady pressure against the filling, to finish. Those who have not tried this will be surprised to see how neatly a filling is shaped up, the edges made smooth, and the whole perceptibly condensed.

I will venture the assertion that if cavities are properly prepared, fillings packed and finished as they should be, decay will seldom recur. If we do our whole duty and are skilful, teeth operated on should be in far better condition to resist decay than before they were first attacked. It is impossible to fix a given time for the durability of any filling, but, aside from some phases of disease or of accidents, I believe if a filling fails within six years the fault lies usually with the operator. For posterior teeth, needing entire restoration, permanent gold matrices or bands, filled with amalgam, are of great value. In this work, I cut or crowd the gum tissue back, dress the root as desired, make a close fitting band, varnish both sides to prevent the mercury discoloring, force it firmly on the root, dry, and if any minute crevices exist for ingress of moisture, stop them with a little gutta-percha, then adjust the dam as on any tooth and prepare the root canal and insert a post.

The amalgam may be packed to restore cusps, and should be nicely finished at another sitting. Or, amalgam or cement may be used for most of the filling and the cusps restored with gold foil. This is better than an ordinary gold crown, because the work can be seen in every stage, and an imperishable joint is formed between root and band.

—Dr. G. W. Dennis, in *Illinois Society*.

THE TEETH.

Being the hardest structures of the body, the application of any force necessary to move the teeth will not injuriously affect them, so far as their hard tissues are concerned.

A mechanical difficulty associated with their moving consists in the fact that their crowns are round and smooth, thus making it somewhat difficult to apply force at a given point. This difficulty, however, has been overcome by the introduction of the Magill band.

In considering the moving of teeth, the fact must not be overlooked that while the crown may be moved considerably, the movement becomes less and less along the line of the root so that the apex is moved but little. This is caused by the fact that force can only be applied to the crown, while the apex remains almost a fixed point or fulcrum. In the movement of a tooth, therefore, whether inward or outward, forward or backward, the crown describes the arc of a circle, the centre of which is near the apex of the root.

Teeth with single and short roots can be moved more easily than those with many roots, because in the former there will be less resistance.

S. H. Guilford.

MORBID GROWTH OF GUMS.

Miss —, aged fourteen. Complexion, light; eyes, blue; hair, dark brown; stature, medium; lips much swollen, the lower rolling to the chin, upper nearly reaching the nose, both covered with a thick black scab from angle to angle of the mouth two and a half inches, and from superior border of upper lip to inferior border of lower lip one and one-half inches; mucus constantly streaming from the mouth. Being unable to expectorate it required constant wiping, and it was so ropy that she had to make a ball of her handkerchief and keep rolling this, winding the mucus on it till the end of the rope came. Breath so fetid, as to pervade the whole room in a few minutes. Teeth not to be seen, the gums completely hiding them. Gums greatly tumefied both externally and internally, superior and inferior, from tuberosity to tuberosity, and from ramus to ramus; bleeding at the slightest touch; soft, spongy, bright red; hemorrhage hard to stop when once started. When the jaws were closed nothing but the tumefied gums came in contact, being unable to partake of any solid food for eighteen months previous. Unable to open the mouth but very slightly, on account of the pain from cracking and pulling of the scab covering the lips, which was fully one-eighth inch thick in places.

HISTORY.—About twenty months previous, treatment was commenced for the removal of a small goitre, there being but a slight enlargement of the gland. Shortly afterward the teeth became sore, though there was no excessive flow of the saliva as in pytalism. The soreness increased so much that she was not able to masticate her food. From that time to the present she has taken no solid food, and been under constant treatment by physicians of her own city or those of note in a larger city. Dr. Frothingham was one, then of the University of Michigan, who called me in to see whether the teeth had anything to do with the trouble, and if they did to extract them. This was my first introduction to the patient.

After an hour's examination, believing the teeth were innocent of the cause and that to extract them would only aggravate the case and might possibly cause a fatal hemorrhage, I so expressed myself to the physicians, stating my belief that a certain line of treatment would cure the patient and save to her a full set of sound teeth except one. They both left the case in my hands.

TREATMENT.—I first removed the scab without irritating the raw surfaces beneath, by using a mixture of a little iodine, carbolic acid and glycerine in tepid water, soaking the parts and then gently

lifting the scab with a sable brush. There was no epithelium covering the lips, and they were so sensitive that it was almost impossible to work in the mouth, but by care I succeeded in removing most of the sordes on the articulating surfaces of the teeth by passing the instrument between the folds of the gums. I then applied a saturated solution of two drachms iodine crystals; half drachm carbolic acid, and three ounces glycerine, working it in through the folds of the gums thoroughly. Also, I directed her to sleep with a cloth over the mouth wet with eight drops of this mixture in four ounces of water, and to wear it during the day time. I administered iodide of potassium in light doses internally. The action of the treatment was as anticipated. A thorough application to the gums was made three times a day for three weeks of the saturated solution of iodine, etc. The cloth kept constantly on the mouth and moistened, as at first, and the mouth cleansed as thoroughly as possible morning and evening. The mucous membrane of the whole mouth was covered by sores which could be scraped off in large quantities. Little pits filled with the sordes thickly studded the mucous membrane, from the gum to where it was reflected to the inner surface of the cheek and lips, sometimes penetrating the mucous membrane a line deep. The character of the sordes was like that of typhoid fever, but was not found on the buccal or lingual portions of the teeth till the gums receded enough for the teeth to be seen, and then it began to collect. In three days the swelling had entirely left the lips. They had been so long distended that the obicularis muscle had lost all power to contract and the lips lay in folds. The gums did not yield as readily, it being a week before they were reduced enough to expose the teeth all around. At the close of three weeks the tumefaction had so nearly passed away that the patient could masticate soft food such as bread, potatoes, etc. There could be seen fine lines of epithelium creeping over the lips, though still mostly raw and sensitive. The muscles of the mouth had resumed their functions though still weak.

I now allowed the patient to return home with the understanding that she would come home once a week, when I applied the saturated solution of iodine, etc., locally, morning and evening, and for constitutional treatment gave Winchester's preparation of Churchill's hypophosphites of lime and soda. Within two months the patient gained twenty pounds. Epithelium covered the lips, gums nearly normal in size, yet there was a fine red line along the margin of the gums which showed a tendency to return, and the teeth were tender to hard chewing. Chloride of zinc, peroxide of hydrogen, nitrate of silver and many other remedies seemed only

to aggravate, and the same with excision. Then I reduced local applications to twice a week and constitutional treatment the same as before. Dismissed patient to return in one month, and monthly through the year. Saw her quarterly for two years more when the last trace of redness had disappeared, the gums looking healthy. The last year I substituted one part cider vinegar and two parts water for iodine solution, using cloth to rub the gums.

—*Dr. W. H. Jackson, in Ohio Journal.*

REFLEX SYMPTOMS.

The details of a somewhat singular case of reflex nervous action was presented to the Southern Illinois Dental Association at its late meeting at Chester, by Dr. Brecht, from which we cull the following synopsis:

Winter Park, Florida, December, 1889, a gentleman suffering with intense toothache, called at my office and desired to have the offensive member extracted. He said he had suffered for the past two days, and could endure it no longer. Asking him which tooth was troubling him, he pointed to the second right upper molar. An examination showed that he had lost all the molars and one bicuspid on the left side; lower, first and second molars on the right side; remaining wisdom quite sound; the first and second bicuspid and first molar, right side upper second molar somewhat elongated, but sound; some space between it and the wisdom tooth, which was also sound. Neither of these teeth gave any response to extremes of heat or cold, or evidence of soreness on percussion. But two small cavities of decay were found in the remaining teeth, neither of which were sensitive. When the patient discovered that I was trying to locate the pain in some other tooth or teeth, he exhibited a good degree of impatience, saying:

“I know which tooth is aching me, and I want it out.”

When I told him that I felt confident that the trouble was not in that tooth, or even near it, he became more impatient, saying if I did not want to extract that tooth he would go elsewhere; but when told he could go, he seemed to conclude he did not wish to, and at last consented to wait till the next day before having it out. Local remedies were applied with no perceptible benefit. The pain would shift from the tooth to the eye and temple. After two hours of this kind of treatment the pain seemed to abate a little, and my patient returned to his hotel, to report the next morning if no better.

As I anticipated, he returned; he had not slept a moment on account of the intense pain. Cheeks decidedly flushed, and he reported a slight chill during the night, caused, he said, by the extreme pain. Was convinced that the trouble was not in the antrum, and told him that he must look elsewhere for the cause of the pain from which he was suffering. With much feeling he said if I would take out the tooth, all the trouble would end in a little time; having lost the occluding teeth, the tooth in question was of little use. I, therefore, consented to accommodate him by extracting the offender, but assured him that the operation would not end his trouble; and also that pus was forming in some part of the body, and that he would hear from it before he was relieved. The tooth was extracted, and the pain disappeared momentarily. Before leaving the office, the pain had started below the eye. He would not admit that it was as bad as it had been, but from his looks I judged it to be severe. My patient styled himself doctor. He belonged to that class of remarkable healers who claim to cure all ills to which flesh is heir by the laying on of hands, Christian science, massage, etc., but in his own case he failed to conquer the toothache. I could not, therefore, prevail upon him to take any remedies I suggested. The only remedy he would take under any circumstances would be sugar pills. He left my office, saying he would be all right before long. I assured him that I hoped he might be, but his saying so did not make it so. He asked in what part of his body the abscess or pus to which I had referred was forming. My answer was, either in your liver or bowels. He left my office Tuesday, 11 A.M. I heard nothing more of him till Friday P.M., when I indirectly heard that the doctor was very ill, and had sent for a homœopathic physician. At 11.30 P.M. on Saturday, I was called by a messenger to go to the hotel as quickly as possible to see a very sick man. The messenger could not tell me who it was. When I reached the hotel and was taken to the room of the sick man, I found it was my toothache patient, the doctor. Dr. Sugar Pills was present, and when I asked what I was called for, was told this man is bleeding to death. On my refusing to do anything in conjunction with a homœopath, Dr. Sugar Pills at once left the room. I found the patient in a comatose condition, pulseless and rapidly sinking. I called Dr. Henkle as quickly as possible, and administered brandy to the dying man as fast as he could be made to swallow it. I learned that at 7 o'clock of that day the patient had passed a large quantity of pus by the bowels. Soon after hemorrhage set in, and had continued until my arrival. My friend, Dr. Henkle, was soon at the bedside, and through the administration of injections of tan-

nic acid and other means, we succeeded in arresting the hemorrhage. Beef tea and brandy were given at short intervals. With the reaction came fever and delirium, which was met and overcome. Quinine was added to the beef tea and brandy, also teaspoonful doses of Listerine, which I believe did as much as anything to bring about his recovery. The doctor recovered his health, and is, for aught I know, practicing his rubbing on other poor deluded mortals.

—Archives.

THE "FEATHER" PROCESS OF FILLING ROOTS.

If possible never use a drill in the canal of any tooth. Never open with bur or drill below the floor of the pulp chamber.

Expose each canal perfectly before you enter.

Use broaches and nerve canal cleansers, being careful not to force any débris before them and through the apex.

Wash out always with tepid water first, peroxide hydrogen second, dilute alcohol third.

Never use very powerful and strong medicaments, and remember cleanliness is a step to success.

After the canal is purified, be sure and get it dry.

As a material to fill with, I recommend Virgin gutta-percha, dissolved in chloroform, FILTERED, and to this add oxide of zinc to make a cream.

To introduce this material, I use simply a feather, trimmed closely from tip to bottom; I have found that the feather will follow almost any canal, and the beard on each side pointing up, acts as a first-class carrier. There is no danger of too much force, and in all they act like a charm. They not only carry the material with which you fill, but are fine to apply treatment through the canal and into the sac or abscess. These feathers are of course, thoroughly aseptic, having been soaked in a solution of bichl. hyg.

After the canals have been pumped full, I have a peg of pure fat pine made to fit the canal as nearly as possible. This I dip first in corbolic acid, dry, and then dip in the chloro-percha, after which I gently force it up into the canal and cut it off. Here we have a pure fat pine peg, corbolized and coated with gutta-percha, forced in to drive the gutta-percha home. One idea just here: Nature made or left these canals, and if no pathological lesion has taken place, if they are normal, the less we do in the way of medicating and drilling, the more successful we will be.

—Dr. Geo. B. Clements, in *Southern Journal*.

COVERING GOLD CROWNS WITH GLASS.

[From proceedings in New York Odontological Society.]

Dr. J. Bond Littig: Mr. President, I would like to present to the society this evening a method for enameling the faces of all gold crowns. We all know how conspicuous gold crowns are in the mouth, which characteristic has always been very objectionable to me, and I have tried various devices for remedying that difficulty. Since the introduction of glass fillings, I have hit on a plan which removes almost entirely the unsightly appearance, and I thought it might be interesting to describe how I did it. After fitting the ordinary gold crown to the root, I remove the crown and fill it with modeling composition, to keep it from bending. Then, with the ordinary jeweler's saw, I cut out the lower part of the buccal surface of the gold crown, commencing at the cutting-edge, leaving a ring of gold at the top. I then remove the composition and fit a piece of either thin platina or gold—I prefer the platina—to the inside of the crown, just to the edges of the opening made with the saw. I always thicken the crown at the cusps with solder, using twenty-carat solder, and, holding it over the burner, I solder the little piece of platina at one end, and then add the glass filling of the proper shade. The color depends much on how it is fused; if it is fused too much, it bleaches; if fused too little, the color is not brought out. After wetting the glass with water, I pack it in over the platina, and with some bibulous paper make it as smooth as possible; then I hold it over the alcohol lamp with the pliers. If not plump enough, I repeat the process till I have it contoured to my satisfaction. I have had some of these enameled crowns wearing in the mouth for six months, and there has been no change.

I have tried another way too,—that of grinding very thin pieces of porcelain from English teeth, or even American teeth, fitting them towards the surface, from the inside, and fusing glass around them. That gives the color a little better, but it is more work. Enameling by the first method can be done in ten minutes.

The President: This is a very interesting subject, and refers to a thought that has passed through the minds of almost every dentist.

Dr. J. Morgan Howe: I can testify to the practical and artistic success of this device, which Dr. Littig suggested to me some time since, though I have used it only once—one in which a small cap seemed to be about the only thing that could be used to preserve the tooth, without the necessity of destroying the pulp. Posterior

and anterior proximal cavities had so weakened the buccal wall of a bicuspid that it broke down, though the pulp was alive. By means of this device, of putting a veneer of color, proximating the color of the teeth, on the buccal face of the cap, I made what was to me a very satisfactory operation; and, as Dr. Littig says, the use of the glass in facing the gold cap did not take over ten minutes.

—*International.*

LOW-FUSING ENAMEL FOR GOLD PLATES.

About forty years ago, Dr. Levette, of New York, brought to the attention of the profession an enamel for gold plates. An agent called on me in Boston to introduce it. I was wearing a small eighteen-carat gold plate, to which he applied the process; it was very pretty to look at, and seemed to be worthy of general introduction. To my discomfiture, however, it soon began to chip off; this, of course, was not pleasant, and I soon removed the balance, fully satisfied that *glass* (and a substance which will fuse on gold plate is nothing more than glass) was not the thing to spread over the surface of an artificial denture. The "improvement," of course, was short lived.

"History repeats itself" in dentistry as well as in other things, and it has been quite common for so-called improvements to flourish for a short time until they were found to be worthless, and then, after a lapse of years, some "genius" would rediscover the thing, and bring it forth with great flourish to have it again demonstrated as worthless.

Aside from other considerations, one important feature of an artificial denture is often overlooked, which renders some so-called improvements worthless, viz., the inability to repair the plate, like the "continuous-gum facings" placed on rubber. To repair, the rubber has to be removed, the repairing done, and a new rubber plate made.

In this *glass* continuous-gum (even if there were no danger of its chipping off and getting into the stomach), when a tooth has broken off, which will constantly occur with no fastening but glass, the case has to be placed in the furnace, and it will, even with the greatest care, crack both teeth and enamel, and the dentist will wish he had never been born. Let us therefore go slowly.

—*Dr. L. P. Haskell, in Ohio Journal.*

REFLEX PAINS.

A patient for whom we had done considerable work complained that her eye-glasses were out of focus, and stated that her eyes pained her, feeling as though leaden weights were tied to each eyeball, and that she had a constant headache in the supra-orbital region. We advised her to go to her optician, which she did, and he informed her the eyes required a change of glasses. On consulting her oculist she received the same assurance, and made an appointment with him. In the meantime, having finished up what seemed to require attention in her mouth, we discovered in making a final exploration a minute cavity in the upper right wisdom-tooth, and on excavating it found that the entire inside of the tooth had decayed, leaving merely a shell of enamel filled with decayed dentine. As the tooth had no antagonist, we persuaded her to have it extracted. The result was that the headache, together with the eye-trouble, disappeared within a few hours, and though three years have elapsed there has been no return of the symptoms.

A young man who was troubled with paroxysms of intense headache, accompanied with retching and vomiting, came to me. These attacks recurred at intervals of about a week or ten days, and were so severe he would be completely prostrated, and was compelled to remain in bed till the paroxysms passed off. Having consulted several physicians, and having had his eyes tested and glasses adjusted without relief of the disturbances, he was advised to have his mouth examined. He stated that he had never had any trouble with his teeth, and did not think they could be the cause of his sick headaches. An examination revealed two small cavities in the upper bicuspid, and two very innocent-looking amalgam fillings in the twelfth-year molars. These were removed. The pulp-chambers had been invaded and a piece of absorbent cotton placed over them without any attempt to clean the canals. After treatment and refilling, the symptoms disappeared and have not since returned.

—Dr. G. G. Milliken in *Cosmos*.

A dentist had lately rather a peculiar experience. A gentleman from a neighboring village called at the office and had some work done, which gave decided satisfaction. A few day later the doctor was somewhat surprised by a visit from, as he supposed, the same gentleman, who wished a similar operation performed. The patient seated himself in the chair, and the bewildered operator ventured the remark that he had worked for him before. "Oh no, it was my twin brother." The mystery was solved.

PHYSICIAN AND DENTIST.

A patient, thirty years of age, presented a very badly-swollen jaw. The patient was unable to open his mouth sufficiently to permit of a proper examination. He had been under the treatment of a physician for three weeks, and was nearly exhausted. His physician told him there was dead bone and necrosis, and he would have to remove it. Exploration was difficult, but I concluded the trouble was from a wisdom tooth coming through in such a direction that it was not possible for it to get into position; it was tilted over in the ramus of the jaw and came directly against the distal surface of the second molar tooth. I informed the gentleman that, if this abscess was opened and allowed to discharge, I might be able to help him.

The abscess was opened and discharged freely, but the hard swelling did not subside, and the man was not able to open his mouth for two or three days, and he suffered much. After the second visit, I told him I was sure there was no necrosis, and our only hope was to extract the second molar, which was sound, and allow the wisdom tooth room to come in. He was not willing. He came to me some weeks after, and I gave him the same advice, but he declined to accept it; he said he would come when he could open his mouth. He went back to his physician who anesthetized him, opened his face, went for the dead bone, and did not find it. The man recovered after awhile, sufficiently to open his mouth, and came to see me again. By that time the wisdom tooth had begun to show itself slightly, and I was satisfied thoroughly of my diagnosis. He had the second molar out, and recovered entirely; but he has two horrible scars on the outside of his face which he will carry to his grave. There was a case of suffering for some two months or more, which could have been cured at the start, in all probability, had there been a consultation between the physician and the dentist.

—Dr. B. F. Luckey, in *International*.

The surrounding tissues, both hard and soft, are largely involved in changing the position of teeth in the act of regulating. Therefore, says Prof. Guilford, to properly comprehend the philosophy of tooth movement, it is necessary to understand the structural character of these tissues and the physiological changes taking place in them while a tooth is being moved.

THE ALVEOLAR PROCESS.

This process, as its name implies, is not a separate and distinct bone, but an outgrowth from another. It is a provisional structure designed to support the teeth in position and afford lodgment for the nutrient vessels leading to them. It is formed on the body of the bones of the jaw as the teeth are developed, growing with them till they are fully formed and then remaining while they remain.

When the teeth are lost, there being no longer any special use for it, most of this process is absorbed. In early infancy little alveolar structure exists, but it is formed co-ordinately with the growth of the deciduous teeth. Should these be lost before their successors are ready to appear, the process will be entirely removed by absorption, and new be formed for the accommodation of the permanent teeth. Where, however, the deciduous teeth are gradually shed to make way for their successors, the process is not entirely absorbed, the basal and unabsorbed portion serving as a foundation on which the new structure is formed.

The alveolar process, being built or formed on the body of the maxillary bones, conforms to them in outline and describes the same curves. In depth it corresponds to the length of the roots of the teeth, while in width it is sufficient to envelop all of that portion of the teeth located below the gum line. It gradually increases in width as it approaches the body of the bone on which it rests.

It consists of an outer and inner plate united at intervals by septa, thus forming the alveoli for the accommodation of the roots of the teeth. In structure, the process is not compact, but open and spongy, somewhat resembling the cancellated structure of the diploe of the bones of the cranium or the inner portion of the shafts of the long bones. Its outer or cortical layer is denser and harder than the inner portion. Its cellular structure, while giving it sufficient firmness to support the teeth in their positions, affords opportunity for the lodgment and passage of the vessels of nutrition with which it is so bountifully supplied.

Owing to its peculiar structure and its great vascularity, it is readily resorbed under the stimulus of pressure and again readily reproduced behind the moving teeth.

—Prof. S. H. Guilford, in *Orthodontia*.

A little girl hearing her mother speak of being obliged to go to the dentist to get some teeth put in, asked if her parent was likely to have fits, as the baby had when she was getting her teeth!

COMPARATIVE METHODS.

QUERY.—*Patient, attractive young woman, pearly teeth, first upper bicuspid missing. Cuspid and second bicuspid not decayed. How would you bridge a tooth into the space?*

ANSWERS.

For first bicuspid, back up a suitable plate tooth. After properly trimming, adapt gold band from cervix to point of cusps of second bicuspid, permit it to pass slightly below margin of gums, a spur of the band to rest in depression of articulating face being desirable; to show all of the natural tooth possible, cut out band on buccal surface, beveling and burnishing the part left at cervix to closely resemble gold filling. Of course previous to setting the band it is well soldered to the "dummy."

B. C. Cornwell, St. Paul, Minn.

Place clasp partly around second bicuspid, and have vulcanite about size of half a nickel come against roof of mouth. I fixed one for a minister once; it was a cuspid though, and to avoid a plate, I proceeded in this manner, and it was a success. There is generally a little space between the teeth after extraction of one, so will not have to make any. Avoid touching tooth or cutting it wherever possible.

R. E. Morrison, Owensboro, Ky.

If bridging was demanded by the patient, I should extend a three cornered bar of platina and iridium into bicuspid and cuspid, by cutting slots into grinding and anterior surfaces of the bicuspid and the palatine surface of the cuspid, and filling around the bars with gold. This would preclude any gold or bands showing, and would make a firm and durable operation.

J. Allen Osmun, Newark, N. J.

I should persuade her *not* to have the space bridged.

J. E. Kells, New Orleans, La.

A bridge would be my second choice. I should implant a tooth, if permitted. To bridge I should use Dr. Parmly Brown's method. Cavity to be cut into the second bicuspid, and bar baked into first bicuspid, which would extend into second bicuspid cavity, to be anchored by a solid cohesive gold filling. By this method there is no gold to show.

George H. Wells, Augusta, Ga.

I should make a solid shell crown on bicuspid. Skeleton or hat crown on cuspid, trimming so as to alter the appearance of the face of the tooth as little as possible. A porcelain bicuspid soldered between.

J. H. Allen, Birmingham, Ala.

Crown the second bicuspid with gold, attaching a plain plate-tooth for first bicuspid, without saddle.

J. Y. Crawford, Nashville, Tenn.

Cap the bicuspid with gold, leaving the labial aspect of the tooth exposed. To this cap attach the artificial tooth, which will represent the missing bicuspid. A short pin inserted in a cavity formed in the deepest sulcus of the occluding surface of the natural bicuspid and soldered in the gold cap will better secure it.

George Evans, New York City.

—*Dental Mirror.*

What is drumine? Where can it be procured? How is it to be applied, as an anesthetic?

S. E. Catherall, Duluth, Minn.

The wisdom of contouring teeth to their original form seems to me one of those self-evident propositions which is beyond all question.

Dr. W. H. Dwinelle.

EDITOR ITEMS:—In reading your very interesting journal for May, my eyes glanced on an article by R. T. Jones on root-fillings. Dr. Jones may read in the *Independent Practitioner* of August, 1884, on page 464, an article on iodoform, by my brother, C. J. Reinhold. I have been using iodoform myself ever since 1884, with grand success in connection with chloroform and gutta-percha.

D. K. Reinhold, New York.

REPLACING A GOLD FILLING BY A PIVOT.—I was lately called on to replace a gold filling, consisting of the lower third of the right central incisor, both centrals having sustained transverse fractures three years previous. The nerve canals had been filled, but the teeth were loose and somewhat elongated. The filling had broken off about a sixteenth of an inch up in the tooth. I drilled a hole in the old filling the size of 20 English gage, and made a pivot by rolling platina foil on itself and flowing solder through the folds to stiffen, then soldered this pivot to the plug, barbed the root end and cemented the plug back in place with oxyphosphate. It seems strong as ever after three months' service.

Dr. J. E. Miller, South Bend, Wash.

THE TREATMENT OF DANDRUFF.—Dr. Edward Clarke, in the *Lancet* for December 27th, states that he has had good results in persistent dandruff from the following treatment:

The scalp should first be thoroughly washed with soap and hot water, and then thoroughly dried with a warm soft cloth; there should then be rubbed into the scalp a glycerole of tannin, of the strength of ten to thirty grains to the ounce. Very obstinate cases will require the higher strength of tannin. This process should be repeated twice a week at first, once a week afterward. If tannin fails, as it will in some cases, then resort is had to resorcin. After the formation of dandruff has ceased, the head should be rubbed daily with olive oil, containing to the ounce, ten grains of carbolic acid and a dram of oil of cinnamon.

—*Lancet-Clinic.*

Monthly Gossip.

BY WM. E. BLAKENEY, D.D.S.

MYRTOL, as a sterilizer, is rapidly coming to the front.

COPPER AMALGAM, it would seem, has been tried and found wanting.

THE USE OF ARSENIC for the devitalization of pulp was introduced by Dr. Spooner in 1836.

NEW DENTAL JOURNALS, without strong financial backing, make slow progress, now-a-days, in the race for life.

THE BEST PREPARATION for the hands at night, says an exchange, is the white of an egg with a grain of alum dissolved in it.

HOW ARE WE TO DETERMINE what is the most nutritive food to eat when experts differ so widely in their views on this subject?

THOSE WHO DESIRE to prepare pheno-camphor can do so easily, by dissolving three parts of camphor in one part of carbolic acid.

A FEW EMINENT PHYSICIANS have recently suggested that surgery may play an important part in the future of pulmonary complaints.

G. LENOX CURTIS, M.D., D.D.S., has discovered the bacillus, whose mission is to produce the excruciating misery experienced in well-defined cases of tetanus.

AMONG MEN, the thoughtful, serious, earnest men of power, to whom all eyes instinctively turn, in action for leadership, in peril for deliverance, in perplexity for counsel, are the silent ones.

THE NEW METHOD of treating phthisis, recommended by M. M. Traagen, of Sistow, and Vinogradow, of Odessa, include the use of mercury in intramuscular injections, iodine of potassium internally, and vaccination.

BEFORE TAKING THE IMPRESSION of roots for crowning, Dr. Palmer places a wooden peg in the root canal and packs gutta-percha around it, forcing the gum out of the way. The impression is then taken, and when removed from the mouth the peg comes with it.

TO ABATE THE ODOR in maxillary necrosis Dr. T. L. Gilmer recommends opening up the soft parts so that access may be had to the dead tissue, and washing out the pus pocket with peroxide of hydrogen, then using aqueous solution of the permanganate of potash.

WHEN GOLD CROWNS are a necessity for the bicuspid teeth, an ingenious process of enameling the buccal surface with glass, of

desired color, easily and quickly fused, was described at a late meeting of the N. Y. Odontological Society, by Dr. Bond Littig.

THE SNAIL, if the editor of the "Ohio Journal of Dental Science" is correct in his figures, has 110 rows of teeth, with 111 on each row, or 12,210 teeth in all. Fortunate it is for "cheap" dentists that they are not required to furnish artificial grinders for these insects at six dollars a set.

PROFESSOR JAMES T. WHITTAKER, in a brief retrospect of his life work, among other instructive things, said: "Thoughts and principles conceived in moments of inspiration may be executed in hours of dullness." He who is able to bring his mind under this discipline is sure to make a name in the world.

"KEEP THE DIGESTIVE SYSTEM normal and the nervous system in serene equilibrium, and, all things being equal, a limit is placed on dental caries." This is the opinion of Dr. Faught, of Philadelphia; but how, we ask, is the digestive system to be thus happily regulated, and the "serene equilibrium" maintained?

"THE OPTICAL FUNCTION of a normal eye," says Dr. Lewis S. Dixon, "is exactly that of a photographer's camera—to refract or bend the light received from objects to a focus, and produce a sharply-defined picture in the camera, on the prepared plate, so that it may be taken in the eye on the retina, so that it may be felt or perceived."

DR. EUGENE J. WETZEL, of Germany, says: "Physiologically, the first molar is the most useful tooth in the whole arch, and it presents the largest area of crown-surface, and situated in a position where mastication is greatest, and is admirably adapted to bear strain." And yet there are many cultured dentists who advocate the slaughter of the first molars for trivial cause.

J. F. W. SILK, M. D., an English authority of prominence, in speaking of the death rate and dangers of bromide of ethyl, said: "I cannot help thinking that the fatalities which has been hitherto recorded rather tend to exaggerate the danger of the drug when used in dental surgery." This is merely a matter of opinion, unsupported by argument, and at variance with the history of the drug.

PROFESSOR C. N. PEIRCE says: "Disuse is a predisposing cause of decay in the teeth. In my practice I have always advised my patients, where they had teeth decaying rapidly, to eat their food as dry as possible, to masticate it thoroughly, and to give the teeth as much use as they could, and that little advice to my patients has been of great assistance to me, and of very great advantage to the

patients themselves." Excellent advice, and were it rigidly followed dyspepsia and its kindred diseases would be unknown.

DR. WM. DALL, of Scotland, has evolved a method of anchoring artificial teeth which is new and novel, if not exactly practical. The doctor's plan is to "fasten two gold pins to the denture, and have them enter holes made by drilling into the jaw, or the sockets from which teeth have been extracted." A gold bolt fastened to the denture with a thread on the end of it going all the way through to somewhere, and secured by a nut, would fix 'em, Friend Dall. Try it. The idea is immense, and you are welcome to patent it.

A CORRESPONDENT in the *International* describes a method adopted by Dr. Oltramore, of Buenos Ayres, of making fillings of gold and cement, which seems practical. The doctor prepares beforehand a piece of gold of the size and approximate shape of the opening of the cavity, by condensing a few cohesive cylinders on a serrated steel plate. He then fills two-thirds of the cavity with oxyphosphate, places his prepared piece of gold on the cement while it is yet soft, and finishes the filling by putting on more cohesive gold, till the desired fullness is arrived at.

DR. PIERRE is a French dentist, and practices his profession in Paris. Dr. Pierre is an occasional contributor to dental literature, and when he indulges in this kind of luxury he deals largely in the flowers of rhetoric. The doctor published an article, a short time ago, in a French journal on "The Diseases of the Mouth," from which we extract the following passage: "In good state of health the lips are rosy and fresh, sweet and voluptuous, the gums hard, shiny and smooth, encircling the teeth in a frame of coral, and the breath is inodorous." Just think of it! Rosy lips, fresh and sweet and voluptuous! and that frame of coral, whew!

DR. F. S. WHITSLAR has been delving into ancient records to prove the antiquity of dentistry as a co-ordinate branch of the healing art. The doctor says "rudely manufactured teeth were discovered in the sarcophagi of the Egyptians, and that Albu-cases, an Arabian physician, who lived in the early part of the eleventh century, wrote on diseases of the teeth, and gave drawings of instruments then in use for extracting, scraping and other dental operations; and that Fouchard, of the eighteenth century, was the first to classify the diseases of the teeth." The echoes of a long since buried past are of peculiar interest to the earnest student, and Dr. Whitslar is deserving credit for his researches in this fruitful field of investigation. The doctor's paper is published in full in the *Dental Register*.

Our Question Box.

WITH REPLIES FROM OUR BEST AUTHORITIES ON DENTISTRY.

Address all questions for this department to DR. E. N. FRANCES, Uvalde, Texas.

Question 16, *in July number, should have read: "In a THOROUGHLY aseptic, or disinfected root canal, why fill the root perfectly, from apex to crown, to save it?"*

The following answer was misplaced, and failed to appear in our last:

The anatomical structure of a tooth, as discovered by the microscope, shows that the dentine is ramified by what is known as Haversian canals, Canaliculi, and Haversian spaces, these are filled with nutrient vessels, nerves, etc., etc. When the pulp has been devitalized, these spaces are filled with the remains of these nutrient vessels and nerves, and according to some become mummified, that is to say dried up, but still remain in their original places; now, when you remove the pulp and remaining portion of the contents of the nerve canal you have a direct communication with the canal above or at the extremity of the roots, where always may be found some moisture, and in many instances fluids; these find their way into the nerve canal, and by the natural tendency of anything dry, to absorb anything moist that may be in the neighborhood, take to themselves what their capacity will admit, not only filling the microscopic spaces and canals, but the portion of the nerve chamber remaining unfilled. This in turn being acted on by heat, the parts produce chemical changes in the chemical constituents of the fluids and convert them into gases, the remaining becomes fetid and decomposed, forming the base for putrefaction. Thus we have innumerable host of causes for trouble, such as abscess, neuralgia, caused by pressure of the gases on the nerves in the main channel that gives supply to the teeth themselves, and not only there, but by sympathy to the adjacent parts, this is evident from evidence found on opening a tooth that has been filled without filling the root, an intolerable odor, abundance of pus, pain swelling, heat, and redness, all the evidence of an acute inflammation. Now remove the cause above stated, and thoroughly disinfect both pulp chamber and nerve canal, fill the roots with gutta-percha points, first having dipped them in chloroform; then fill the crown, taking the greatest pains to have the work done in the most thorough manner, and in the majority of cases all trouble will cease; this, to my mind, is evidence enough to convince any one of the necessity of filling roots from the apex "down."

Adelbert H. Lee, D.D.S.,

611 Pennsylvania avenue, S. E., Washington, D.C.

Question 17. *What is the best way of attaching rubber gums to gold plate?*

By means of platina loops soldered to the plate.

Frank Abbott, New York City.

Loop a piece of platina wire and solder to the plate under the pins; if done properly it is very strong. *J. H. Batchelder, Salem, Mass.*

As a general rule I take an engrave tool and roughen the surface where I intend to place the rubber, letting the triangular particles thus raised turn from their base at an angle of say fifteen degrees. Before packing to vulcanize, I thoroughly cleanse metal with alcohol, and as yet have not had one come off or get loose. *A. H. Lee, D.D.S., Washington, D. C.*

Would use either platina pins from broken blocks of teeth by soldering with Evans' prepared solder (used for gold crowns), or with engraver's chisel make deep indentations along the ridge in such a way as to cause the points of gold to rise up. *H. S. Abendschein, D.D.S., Baltimore, Md.*

Question 18. *I have a case I do not understand. The patient is a lady of thirty years. Her gums are gradually receding from around the neck of the teeth. Aside from that, the gums seem healthy and all right. Her teeth have the best of care. The lady's father lost nearly all of his teeth in the same way. They elongate, loosen, and finally fall out. Do you know of any way of treating this case successfully?*

I consider this case hereditary. I have had several similar—entire families—in my twenty years' practice, and found by inquiry that it had followed down several generations. Think there is no permanent cure.

F. J. Bradner, Pulaski, N. Y.

In my opinion, nothing can be done successfully, as it seems hereditary; though to keep the teeth clean and membrane in as healthy condition as possible would no doubt do good. *E. Ernest Murray, Boston, Mass.*

It is hard to resist hereditary tendencies. All my remedies failed in a case like this, a year ago. Patient was a wealthy man, about forty, and had always given his teeth the best of attention.

Lindley H. Henley, Marshall, Tex.

I have had a number of patients similarly afflicted, and consider such cases very unsatisfactory to treat. I should clean the teeth most thoroughly, and insist upon their being brushed toward the masticating surfaces. Also, rinse the mouth daily with a mild astringent and tonic.

L. D. Woods, Grand Rapids, Mich.

If there is no formation of tartar, I would treat locally with, first, fifty per cent solution of aromatic sulphuric acid; second, colorless iodine; third, freely with aristol. Would give moderate doses of calcium sulphite (the product of the oyster shell, not the chemical preparation), and also insist upon steady use of moderate stiff brush on gums.

B. J. Hill, East Akron, O.

I use sulphuric acid. Work it well up under the gums around each tooth, and remove all deposits, if any; after which apply bicarbonate of soda. I prescribe tincture of myrrh and cinchona, equal parts, to be used as a wash for gums, once a day. I request patient to brush teeth and gums—especially gums—four times a day. Repeat treatment in four weeks, if necessary, but not sooner.

B. F. Carmichael, Schenectady, N. Y.

The case of receding gums, in healthy mouth, would indicate innate predisposition toward alveolar pyorrhea, as you say her father was troubled in the same manner; otherwise there must be some foreign substance irritating the parts affected. The operator must remove all minute particles of salivary calculus; examine with precaution if there is not a slight deposit well down under the free margin of gums. Cause removed, trouble subsides; new granulation must be set up.

Treatment: Inject peroxide of hydrogen down below the affected portion, till effervescence ceases, following with a ten per cent solution of carbolic acid. Bathe parts every day, for one week, with glycerine. I have had very good success with this treatment. If this fails, operate by cutting out diseased tissue (hyd. chl. of cocaine being previously applied), allowing new granulation to take place. The tissue cannot be made to take original position, but treatment simply arrests it where it is.

Ira B. Crissman, Chicago, Ill.

In replying to Question 18, I will refer you to subject of Pyorrhea Alveolaris, recession of gums, etc., published in the *American Journal of Dental Science*, recently. In that article you will find my views in detail. I question if you are not laboring under a mistake concerning the loss of teeth of the father. It is but seldom, if ever, that teeth loosen and drop out in consequence of recession of gums or gum waste; nor is there any elongation; but both conditions prevail in extreme cases of pyorrhea.

As there is no tumefaction of gum or pus discharge in the case of your patient, it must be a case of simple recession, or waste of gum, which may continue through life and not prove serious or cause the loss of a single tooth. After reading article above mentioned, if there should be any point not clearly understood, I will be glad to answer any questions, and aid you as far as I can.

B. F. Arrington, Asheville, N. C.

Question 19. *How may a pulp be painlessly removed after the application of arsenic? My experience is doubtless that of others: the removal of the pulp from canals is often attended with great pain, even eight days after the application of arsenic.*

I give the patient gas, and drill it out with the engine.

E. Ernest Murray.

If too sensitive to allow of complete removal, would apply creasote or chloride of zinc, and keep cutting.

L. D. Wood.

I first remove all inflammation from the pulp and then apply the arsenic, allowing it to remain forty-eight hours. I think, if you leave it too long, the pulp recuperates or takes on new life; in this case, I apply carbolic acid and chloroform.

B. F. Carmichael.

I allow the arsenic (white oxide) to remain upon the pulp direct, at least four days, always using gutta-percha for a temporary stopping. After removing the arsenic, I saturate a pledget of cotton with tannin in solution with glycerine, and allow it to remain one week. The pulp can be taken out whole, without the least pain.

Ira B. Crissman.

Pain is felt in removal of pulp, when that part nearest apex is unaffected by the application of arsenic. Would inject to the apex (with hypodermic) a

few drops of muriate of cocaine, 10 per cent solution. Take piece of small piano wire, and, after bending portion of end to angle of 30° , sharpen to lance edge. This can be inserted along side of pulp to apex, and, by twisting the instrument around quickly, the pulp will be amputated at the apex, and be removed with little discomfort to the patient. *B. J. Hill.*

Moisten a small portion of cocaine with campho-phenique, and pump it into the pulp cavity. Have ready a piece of cotton, saturated in carbolized resin; press this in cavity and let remain ten minutes; then remove nerve. Treat and *save* pulps much as possible. *F. J. Bradner.*

After the introduction of devitalizing agent, seal the cavity, and let it remain sealed for forty-eight hours; then adjust the rubber dam and unseal cavity. Apply to the pulp a little fresh hydrated peroxide of iron, puncture the pulp, and absorb the blood with cotton. Wipe out cavity with cotton, moistened with oil of mentha viridis, and if the pulp is still sensitive, place a little of the oil directly on it. Now place in the cavity, and in contact with the pulp, a pellet of cotton, moistened with a saturated solution of tannin in glycerine. Fill cavity with gutta-percha, leaving a small opening for vent, and after eight days, the pulp can be extirpated nearly, or quite painlessly, and without hemorrhage. *W. D. Tickner, Randolph, Wis.*

The surest way, perhaps, would be, to allow it to decompose and slough to apex; but this requires time and treatment. Pain may often be reduced to the minimum by filling the cavity with crystals of hydrochlorate of cocaine, and seal up for ten minutes.

If this fails me, I take a bit of floss silk, saturate the end with creasote, oil of cloves or water, and rub into the fibre common arsenic, placing as far up against the pulp as I can, without giving great pain, leaving the end where it can be easily reached for removal. If you persist in this plan, you will succeed painlessly, though the tooth may elongate slightly, which will shortly disappear after completion. *Lindley H. Henley.*

I see no difficulty in the way, provided the devitalization has been thorough and reasonable time given before effort to remove. To devitalize a pulp, I take a small pellet of cotton, moisten with campho-phenique, touch delicately with finely pulverized arsenic, convey to cavity and press gently, and cover with bees'-wax, using a warm instrument to flow the wax, so as to prevent ingress of moisture. At the expiration of eight or twenty hours, as may best suit convenience of patient, remove dressing and wash out cavity, and test to see if vitality is destroyed. If not destroyed, reapply remedy and test again. If front teeth, I wait from six to eight days for pulp to soften; molars I indulge from ten to twelve days, sometimes fifteen—not longer. Make free opening into pulp chamber before attempting to remove contents.

It is not possible to introduce instruments into all roots, as some preclude the possibility of such an operation, so we have to rely upon other means for success. Except in cases of pulp stone (which often proves perplexing), I seldom make a second application of remedy, and can generally extirpate successfully in from six to twelve days. In removing nerves from incisors or canines, it has been my custom for twenty-eight or thirty years, in preparing for filling or crowning, to destroy pulps by the sudden and forcible introduction of a pointed stick of orange wood or whale-bone, the latter preferred, shaped to root canal, and entered with one direct blow of

mallet, giving no pain. This is the quickest and best practice for devitalizing when roots are straight. Fill immediately; no delay required.

Question 20. *What is the best way to arrest hemorrhage after the removal of a recently devitalized pulp?*

Use Monsel's powder: ferri sub. sulphatis.

B. J. Hill.

I simply use tannin in solution with alcohol, or use nut gall.

Ira B. Crissman.

I inject peroxide of hydrogen quite warm by first putting syringe in hot water.

F. J. Bradner.

I let it bleed freely, then pump creasote into root, leave it a few minutes, and wash out with alcohol.

B. F. Carmichael.

Have never had but one or two cases worth mentioning. If bleeding is profuse, would pack cotton soaked in persulphate of iron, and leave it, if necessary, a day or two.

L. D. Wood.

Saturate a pellet of cotton with glycerine and tannin, and pump into root canal, letting remain a few minutes and remove.

E. Ernest Murray

My method is to take a small hickory-wood broach, with end dipped in carbolic acid, introduce into canal and press far up as possible, allowing it to remain one minute. This has never failed me.

Lindley H. Henley.

[This question of hereditary diathesis is too often taken for granted, and the fact that the lady's father (in Question A) was similarly afflicted should not influence us but little in our decision at first. What is medicine for the parent is medicine for the child. All families have their medical hobbies, and mercury often holds a prominent position as a cure-all in districts where physicians are few and far between. "Uncles, cousins and aunts" are dosed with it, and the child, with its first symptoms of colic, falls a victim to the family medicine chest.

Now, when we find the parents' gums receding from the teeth, and their children, in later years, going through that same horrible waste and final loss, we too often spread our wings and soar into the realms of professional diagnosis and pronounce it a case of hereditary diathesis. Many things will cause recession of the gums other than the weaknesses inherited from a parent, and an important one is medicine incompetently given.—E. N. F.]

Clear shellac varnish may be prepared by first making an alcoholic solution of shellac in the usual way; a little benzole is then added, and the mixture well shaken. In the course of from twenty-four to forty-eight hours, the fluid will have separated into two distant layers, an upper alcoholic stratum, perfectly clear, and of a dark-red color, while under it is a turbid mixture containing the impurities. The clear solution may be decanted or drawn off with a pipet.

—National Druggist.

For Our Patients.

DIREKTNES.

Tāk me strāt to the mīn ; I dont kār a darnd sent
For the kruked ruf wa, I remembr we went,
When we strōld long the path, with the katl ov old,
Whot I wont frst ov al, iz to get at the gold.

MORAL.

Stop runing round Robin Hōd'z barn to pik up letrz at randum to form wrdz, just bekāz our fōrfathrz did. Uz onli letrz sounded in ur wrdz. If u r kandid, and if u wud b konsistent, u ot to c u o this to ur komun sens. U hav no frthr ūs for the rubish ov the dark ajez.

Dr. James Rogers, Crestview, Fla.

WHAT FUNNY THINGS WE SEE.

[Written expressly for the ITEMS OF INTEREST.]

A CLOCK running while standing still.

A DOG hastily leaving a hornet's nest which he had disturbed.

AN old bachelor, just returned from his club, trying to thread a needle at the point.

THE dentist who repudiates professional improvements rum-maging in the dark for an idea.

THEOLOGICAL pigmies firing antiquated squibs at intellectual giants who presume to do their own thinking.

THE declaration of dental students before being granted a diploma to practice dentistry in Ireland.

A SNARLING dyspeptic cooking his own dinner while his disgusted wife sits in the kitchen mumbling: "Did you ever?"

THE discussion of Drs. E. H. Teskey and S. Mayer, of Canada, on "Adhesive vs. Atmospheric Pressure."

THE "Review" of a book entitled "The Genius of Colonel Robert Ingersoll," by the editor of the *Dominion Dental Journal*.

A DENTAL society listening to the reading of a plagiarized scientific paper believing it to be the brain-work of the reader.

THE names of the "most notable dentists," editorially considered (cost seventy-five cents a line), in the columns of the *New York Recorder*.

A COLORED dominie exhorting his flock to "Keep klar of Brudder Johnsing's hen coop, 'cause dar am savage dog in charge ob de primises, as he 'scover' hisself when come'n from de pray'r meetin'."

THE forlorn look of the dentist who has devoted two hours of faithful service in filling a difficult cavity with gold for a servant girl when told that she only brought one dollar wid her to pay for the job.

A CASE WHERE THE LAUGH WAS ON THE DENTIST.

A negro went into a dentist's office, and after standing about, remarked that as he had not slept for five nights, he believed that he would have a tooth pulled.

"All right," said the dentist. "Sit down here, and I will fix you in a very few minutes."

"Yes, sah," replied the negro. "But look yere. Is dis thing gwine ter hurt?"

"Oh, it may hurt you some."

"But I doan' want it ter hurt er tall. De truf is that I has suffered so much already dat I is tired. Ef you kin pull it without it hurtin' I'll be greatly obleeged ter you, sah."

"I don't think I can do that without laughing gas."

"What sorter gas?"

"Laughing gas."

"I neber yered o' dat sorter stuff, but ef you'se got suthin' yere dat will make er pusson laugh dat has has got de toothache, gimme, and gimme mighty quick."

The dentist administered the gas and drew the tooth. The negro expressed himself as greatly pleased, and after thanking the dentist started to go out.

"Hold on a minute," said the dentist; "you have forgotten something."

"I reckons not, sah," he replied, looking around.

"Yes, you have forgotten to pay me."

"W'y, you ain't gwine charge me nuthin', is you?"

"Of course I am."

"Wall, lemme tell you, boss. Er man dat can hab ez much fun ez you kin oughten ter want no money. Take some o' that gas an' laugh till you furgits de bill. Good day," and he was gone.

—Arkansas Traveler.

SECOND HAND TEETH.

EDITOR ITEMS.—A man, aged about 45 years, of intelligent and respectable appearance, entered my office the other day, when something like the following conversation took place :

“ Have you any second-hand teeth to sell ? ”

“ What am I to understand by second-hand teeth ? ”

“ Why, those that have been used, of course. You see, I have lost most of mine, and I can't afford new ones. Haven't you false teeth that have been used and thrown aside, that could be made to fit me, without much alteration ? ”

“ No ; we do not keep sets ready-made, either new or old.”

“ Well, I know I can get a set up at the hospital, for a man died there the other day, that had a set ; I'll just see if I can make them fit my mouth.”

“ What did he die of ? ”

“ Oh, I don't know nor care ; I can wash them up.”

Friend Welch, can you beat that in America ? For we at the Cape think ourselves rather in advance of you Yankees.

D. F. Ogden, Cape Town, South Africa.



The traveling country dentist in about 1835.

—From J. N. F.

There is no menace applied when a manufacturing dentist shows his teeth.

Why is a dentist like a pioneer farmer? Because he is compelled to pull stumps.

The office of a dentist is also a studio. While he is drawing, those about him are making music and dancing.

The other night little Anna said to her mother: "Oh dear! you'll make me wear my teeth all out saying my prayers."

A lady dentist in Madison avenue uses \$1,000 worth of gold filling in her patrons' teeth every year. She also puts a snug sum in a national bank every year for future use.

A dentist's student, in attempting to draw the decayed tooth of a country patient, pulled out a sound one along with it. The poor countryman nearly fainted with the pain, and when he recovered his speech gave it to the unskilful operator hot and strong.

"Hush!" retorted the apprentice, dreading his employer's wrath, "if master gets to know that I have extracted a couple of teeth he'll charge you double!"

The patient took the hint and his departure without further complaint.

—*Il Secolo.*

HER TEETH KNOCKED OUT.—An amusing scene occurred in Judge White's court. The case on trial is that of Hanna against the Borough of Bellevue. Mrs. Hanna brings suit for damages for personal injuries, claimed to have been received through the bad condition of a portion of the borough sidewalk. She alleged that she had fallen and broken her ankle, and that in the fall four of her teeth had been knocked out. Judge White looked at her for a moment, and then said:

"You say you had your teeth knocked out?"

"Yes, sir."

"Were they natural, or artificial?"

A blush suffused the cheeks of the witness, as she answered in a sort of undertone:

"Artificial, sir."

—*Pittsburg Chronicle-Telegraph.*

Current Notes and Items.

Oklahoma has a dental society. Where will not dentists go? Alaska will be forming a society next.

A new dental college is started in Atlanta, Ga., in which, it is understood, the S. S. White Dental Manufacturing Company have an interest.

Dr. E. C. Kirk is Dr. James W. White's successor as editor of the *Dental Cosmos*. This is a wise choice. Dr. Kirk is an experienced dentist, a good writer, and a man of close observation.

Dr. L. M. Mathews, of Lawrence, Kans., says the "Little Giant" blow-pipe, connected with the operating chair is more useful to produce a flash-flame for annealing gold fillings, that need repairing, than the mouth blow-pipe.

ACCEPTED A PROFESSORSHIP.—W. C. Barrett, M.D., D.D.S., of Buffalo, N. Y., formerly editor of the *Independent Practitioner*, has accepted a Professorship of Dental Anatomy and Pathology in the Chicago College of Dental Surgery. He will enter on his duties at the fall term, which begins in September. Dr. Barrett is one of the most distinguished members of his profession in the East.

A very pretty fluid for bronzing paper, glass, leather, etc., is prepared as follows (*Pharm. Zeitung*): Diamond fuchsine ten parts, and methyl-violet five parts, are dissolved with the aid of heat in strong alcohol. To the solution five parts of benzoic acid is added, and the whole is boiled from five to ten minutes, till its green color has changed to a lustrous golden bronze. This is very brilliant, durable and adherent, is easily laid on with a brush, and dries in a few minutes.

PERFUMED FOR A THOUSAND YEARS.—The mosque of St. Sophia, in Constantinople, is always fragrant with the odor of musk, and has been so for hundreds of years, ever since it was rebuilt in the ninth century, the curious part of it being that nothing is done to keep it perfumed. The solution to the seeming mystery lies in the fact that when it was built, over one thousand years ago, the stones and bricks were laid in mortar mixed with a solution of musk.

At the recent meeting of the Illinois State Board of Dental Examiners, held at Bloomington, May 11th, the United States Dental College of Chicago, which has just closed its first session, was placed in the list of dental colleges in good standing, and its diplomas were duly recognized.

A dentist at Bristol, Pa., received an order for artificial teeth from a man in another town with details as follows: "My mouth is three inches across, five-eighths inches through the jaw. Sum hummocky on the edge. Shaped like a horseshoe, toe forrard. If you want me to be more particular, I shall have to come thar."

A well-known dentist of Oakland, Cal., had an unpleasant experience. He was carrying in his vest pocket a bottle containing chlorate of potash, and, while shaking hands with a friend in the Athenian Club, the friction caused combustion of the potash, and it set the doctor's clothes on fire. His waistcoat and other garments were badly burned before the fire was extinguished, and he got a blistering.

—*San Francisco Alta.*

Dr. W. S. Elliott, a gentleman of well-known ability, has gone on a trip through the South and West, clinicing with the glass filling, and is meeting with hearty acceptance at a small fee. He is out of health. We wish him well. Special attention to the special work, and more is coming. It is equivalent to post-graduate teaching. It is such, and it will be in demand as fast as skilful men make known their purposes, and all such work will help to magnify the importance of our calling. "Come over into Macedonia and help us."

—*Review.*

THE catalog of the Detroit Post-Graduate School of Dental Art is before us. It is equal in its assumptions, departments and promises to any dental college. And why should it not be? These post-graduating schools are quite as important as the more pretentious colleges. It is a wise departure from the old regime. The dental colleges have done much poor work, and left undone much they should have done, and therefore these supplemental institutions are timely, and of great advantage to the mass of dentists. May they thrive. They are not only doing a good thing for dentists, but they are an admirable stimulus to our dental colleges.

The Southern Dental Association meets at Moorehead City, N. C., August 11th.

At the thirty-third annual meeting of the Indiana State Dental Association, held at Indianapolis June 30th, 1891, the following officers were elected: E. J. Church, La Porte, President; R. W. Van Valzah, Terre Haute, Vice-President; G. E. Hunt, Indianapolis, Secretary; Merit Wells, Indianapolis, Treasurer. The Association will meet the last Tuesday in June, 1892, at Lake Maxinkuku, Ind.

G. E. Hunt, Secretary.

The Virginia State Board of Dental Examiners will meet at the Hygeia Hotel, Old Point Comfort, Va., Tuesday, August 18th, at nine o'clock, A.M., to examine candidates for practice. Only graduates are entitled to examination.

The twenty-second annual meeting of the Virginia State Dental Association will be held at the Hygeia Hotel, Old Point Comfort, Va., beginning Tuesday, August 18th, at nine o'clock, A.M. Members of the profession generally are invited to attend, and will receive a cordial welcome.

Following are the new officers of the Colorado Dental Society: President, Dr. R. B. Weiser, of Georgetown; First Vice-President, Dr. D. Murray, of Greeley; Second Vice-President, Dr. S. Davis, of Denver; Recording Secretary, W. A. Smith, of Salida; Corresponding Secretary, Mrs. Dr. Covert, of Denver; Treasurer, Dr. Wm. Smedley, of Denver; Executive Committee, Dr. John Grannis, of Colorado Springs, Dr. J. M. Norman, of Denver, and Dr. W. E. Griswold, of Denver.

The annual catalog of the medical, dental and pharmaceutical departments of the Central Tennessee College, located at Nashville, Tenn., has just been issued, and shows a marked increase in attendance and a broader field in the usefulness of the institution. The college was founded for the education of the colored man. These departments are known as the Meharry Medical College, and were built on the munificence of Rev. Samuel Meharry, of Lafayette, Ind., and his brothers, Alexander and Hugh. The catalog pays the founders of the institution a high tribute.

Editorial.

CLEAN UP.

An unkept, slovenly, dirty dentist is a nuisance. If you can't afford nice professional clothes, shut up shop, and earn them at the anvil or in the potato patch. Look neat and clean anyway. Starve yourself, if necessary, but look presentable. Keep your mouth clean, too, and your breath. Away with that nasty stuff that so defiles the whole body. The idea of burning it in your mouth and making 'a chimney of your nose! It is an offense to your best customers. Have you a bath tub, get in it often, and scrub yourself till you shine. The best cosmetic is thorough rubbing; and the best perfume is cleanliness.

The reception room and office should be as inviting and clean as well-kept parlors. Sleep on the floor, because you can't afford a bed; and eat with your fingers, because you can't afford knives and forks; but provide you office well. It belongs to your customers, and they demand it. They pay for everything that is there, and everything that ought to be there, and they deserve to be catered to. If you won't keep such an office they won't keep you. But the best appointed office may be kept so slovenly as to be repulsive. Keep it clean and trim, or clear out and let some one else come in.

Even in the laboratory, store-room and closets there is no excuse for the accumulation of dirt and rubbish and untidyness. We might as well neglect our underwear, because people can't see it, as to leave rooms in disorder, because unfrequented by the public. We despise a lady that covers up rags and dirt under silks and satins. Let us apply the same rule to ourselves and to our office. A thorough cleaning every day is easy, but after neglect it is hard; and somehow such neglect amazingly vitiates our scent and taste, blinds our sight and blunts our sense of propriety; so that the more we neglect anything necessary for our comfort, convenience or respectability, the more we are inclined to. Weeds grow easily, and spread rapidly, before the hoe has time to rust.

LEARNING TO READ.

A FORMER principal of the State Normal School, of New Jersey, told us once that he did not longer teach children spelling, and that in teaching to read he was not at first careful they should know the meaning of a single sentence. "Our spelling is so arbitrary that the only way for a child to become a good reader is to memorize the form of every word without stopping to analyze its construction."

This is the old Chinese style. Every word is a picture, and their reading is simply interpreting their meaning. What a shame that we are no farther along in the science of written language than these Chinamen?

In fact, if the theory of the New Jersey teacher is correct, we have no such a thing as the science of reading; it is only the science of pictures, the same as with the Chinese.

There is some truth in this, though it is a lamentable confession. Says another educationalist:

It is a waste of time to teach the alphabet or spelling to children, and that time could be saved by teaching them to read words by sight, to recognize the words themselves without regard to their component parts, the letters.

This is really how we all have to learn to read. To learn to write is more difficult, because here you must remember the component parts of each word. But both is a mere subject of memory.

How different it would be if the letters of a word always contained the sounds of the word; that is, if words were spelt phonetically. How quickly children could then learn to read, and what a little exertion it would be to write them.

We should only have to add a few letters to our alphabet and use each letter for a uniform sound, and all would be accomplished.

All is confusion without method; but even intelligent method must be only the skeleton to be filled out with the life blood of activity and the strong muscles of growth.

MORALS AS STOCK IN TRADE.

He that lacks good morals in his inventory of stock in trade lacks an essential of prime importance. Neither wisdom nor skill, nor every other essential of success, will take their place. Even success itself is not success without it.

There is an unconscious influence, an individual atmosphere, a character of identity, that is always and everywhere with us; it is of us, ever active for our weal or our woe, and stamping us for better or for worse. It is more real than all other surroundings; more potent than words; more influential than acts. It will not come by the calling, nor go by the dismissal; it clings to us everywhere and in spite of pretence, profession or asseveration. It is the very breathings of the soul, throwing out aroma or stench, attracting or repelling, giving us standing just where we belong.

And yet we are asked, What have morals to do with the practice of dentistry? Much every way. The instruments may work like things of life, but patients look at the dentist behind the instruments. They are inseparable; and before patients place themselves in our care they measure us up as well as our skill. All pretence of professional dignity is a delusion, and all its ethics are a sham, without good morals, which is the soul of dignity and good manners.

CURING TOOTHACHE AND SAVING PULPS.

Every dentist should have on hand equal parts carbolic acid (not creasote, for we want the coagulable effect of the former), and oil of cloves, made into a thin paste with tannin. When a patient comes with the toothache from exposed pulps, the tooth cavity should be first filled with loose cotton saturated with chloroform, and almost immediately this should be removed and a small quantity of this paste, on cotton, placed on the exposed pulp and covered with sandarac varnish. The chloroform generally removes the toothache almost instantly, but it will soon return, if the paste is not applied. In fifteen minutes examination and treatment of the pulp can take place without trouble.

A patient is always shy of your touching an aching tooth, but there is nothing more grateful to a patient with a severe toothache than a sudden relief, and nothing gives him greater faith in your dental abilities.

If the pulp is to be preserved, the loose debris just over the pulp should be carefully removed, and the walls thoroughly prepared for filling, but the soft layers of dentine found over the pulp should not be removed. Now place a very little more of this paste on a small piece of note paper over the foundation of the cavity, and cover this with thin oxyphosphate. When this has hardened the rest of the cavity may be filled with metal.

We do not say there will be no failures. Some pulps will die in spite of the best treatment. But why have a funeral because your patient is sick? A physician taking such a course would be called a murderer; and a dentist who kills all exposed pulps, because some under treatment will die, should be censured. If your faith in your success is weak, leave the paste covered with only oxyphosphate for a while that you may the more easily get at the pulp at a future sitting.

LITTLE THINGS.

It is in little things we show our real character; so it is in the minuteness of our manipulations as dentists we leave our marks for our good or bad workmanship. To the casual observer, our general character may be accepted as far above the average; but many of us are so loose in little things, so careless and uncultured in our every-day language, tastes and mannerisms, if not really repulsive in many things observable to our more intimate friends and patrons, that, if it were not for their charity, we should repel them. And so in our dental work: we drive ahead as though we were master of every intricacy of the way; we hammer and pound as though we could not make a false strike; we hurry and jump over difficult places as though they were trifles,—and because our work looks finally presentable, we get the credit of being good workmen. “Dead men tell no tales,” says the physician; and we dentists sometime work as though the nice finish of a filling will hide all defects. But

sooner or later, the doctor's dead do tell on his practice, and our bad work will disclose itself.

If we would build up a good reputation, and have an extensive and a remunerative practice, we must be careful of the little things. My mother used to say, "Sweep the corners and hiding places of a room and the center will take care of itself." So in our dental work, if we attend to every little detail, the main, heavy and more prominent part of our work will take care of itself.

IS IT A HUMBUG?

A few days since, we saw Dr. Estebrooke extract forty teeth without pain for three patients, in less than forty minutes. He extracted during the day nearly two hundred, at fifty cents a tooth; and for the last ten days he had taken in eight hundred dollars. During six months of last year he says he took in more than eight thousand dollars for extracting alone.

Is this right or wrong? Is it legitimate dental practice, or is it quackery? He seems to be a careful, skilful operator, passing over to another dentist, teeth, he thinks, should be saved; and so far as we could judge, he leaves the gums in good condition. We asked those for whom he extracted while we were present, if they suffered. The answer of the first, for whom the doctor extracted twenty-six teeth, was:

"No, sir; it does not hurt at all. Is it not singular? And he took a number of teeth out for my uncle this morning, and he declares it did not hurt him a bit."

The next said:

"He hurt me a little when he used that gouge to pry up the root he broke off, but the rest were just splendid."

Before the doctor commenced on the third, he said:

"Madam, I can't take those lower wisdom teeth out without hurting you. They are so broken down, and have been so long abscessed, I dare not apply any anesthetic so low down as to make their extraction painless. Your after trouble would be such that doctors would say I had poisoned you. I will do the best I can."

As she left the chair, she said :

"It is a marvel! I could hear the craunching of the forceps, and the persistent breaking of the left tooth, but the pain was little."

Her husband, the marshal of the city, added :

"He took out several for me this forenoon, and it was just fun."

The letter in another column, from St. Paul, is significant.

Are these dentists deceiving their patients? If so, what dentist would not like to use such deception?—such a boon to the deceived, and such an income to the deceiver!

WAS IT THE WRONG TOOTH?

More than two years ago Mr. McManus came to Dr. E. F. Hanks, of Jersey City, N. J., and, taking the chair, said :

"Jerk!"

"Which?"

"This upper right wisdom."

Examination convinced Dr. Hanks another tooth was the cause of the trouble, and was told to take it out then.

But not being relieved of the pain, Mr. McManus the next day went to Dr. Merritt, and begged him to extract the third molar, which he did.

Mr. McManus sued Dr. Hanks for \$1,000 for pulling the wrong tooth. In the final suit just ended Dr. Hanks convinced the jury by the scientific and professional use of a dead man's skull that he knew, and how he knew, he pulled the right tooth, Mr. McManus' story to the contrary notwithstanding. Even Dr. Merritt, who accommodated the prosecutor in pulling the tooth first named, testified he believed Dr. Hanks extracted the right tooth. Drs. Grey and Hornblower confirmed this opinion.

How often we are beseeched to take out the wrong tooth. We have many times had patients in a fit of toothache implore us to extract a tooth the farthest remote from the cause of their suffering,—even in the opposite jaw. We cannot depend on our patient's judgment or feelings, and should not suffer ourselves, to be swerved from our professional knowledge and experience.